FINAL
CONSTRUCTION COMPLETION REPORT
FOR THE
SNOWSHOE MINE SITE
RECLAMATION PROJECT
DEQ CONTRACT NO. 407053

Prepared for:

Mr. Steve Opp
Montana Department of Environmental Quality/
Mine Waste Cleanup Bureau
P.O. Box 200901
Helena, Montana 59620

Prepared by:

Pioneer Technical Services, Inc.
P.O. Box 3445
Butte, Montana 59701

December 10, 2010

PIONEER
TECHNICAL SERVICES, INC.

P.O Box 3445, Butte, MT 59702
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December 10, 2010

Steve Opp
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620

RE: Final Construction Completion Report for the Snowshoe Mine Site Reclamation Project

Dear Steve,

Please find the attached six hard copies and one electronic copy of the Final Construction Completion Report for the Snowshoe Mine Site Reclamation Project. If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Joseph S. McElroy, P.E.
Project Manager

cc: Dave Tuesday, Pioneer Technical Services, Inc. (w/o enclosure)
Doug Richmond, Pioneer Technical Services, Inc.

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LIST OF APPENDICES
(Appendices A through K are provided in electronic format)

LIST OF ACRONYMS

AML – Abandoned Mine Land
BMPs – Best Management Practices
COCs – Contaminants of Concern
cy – cubic yards
DEQ – Montana Department of Environmental Quality
EEE/CA - Expanded Engineering Evaluation/Cost Analysis
FR – Forest Service Road
Hwy - Highway

MWCB – Mine Waste Cleanup Bureau
North Wind – North Wind, Inc.
Pioneer – Pioneer Technical Services, Inc.
P.O. – Post Office
PVC - Polyvinyl Chloride
QA – Quality Assurance
U.S. – United States
USFS – United States Forest Service
XRF - X-ray Fluorescence
WR-4 – Waste Rock Area #4

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

The Snowshoe Mine Site is an abandoned hardrock mine site listed on the Montana Department of Environmental Quality/Mine Waste Cleanup Bureau (DEQ/MWCB) Priority Sites List (DEQ/MWCB-Pioneer, 1995). At the Snowshoe Mine Site, identified wastes sources including mill tailings and waste rock were located within the floodplain of Snowshoe Creek. The tailings material originated from an adjacent mill that processed ore from the Snowshoe Mine. The uncontained waste materials were impacting water quality and sediment quality in Snowshoe Creek. The contamination is from heavy metals, primarily antimony, arsenic, cadmium, copper, lead, mercury, silver, and zinc. Surface water downstream from the site contained elevated copper, lead and zinc levels.

The purpose of this Snowshoe Mine Site Reclamation Project was to limit human and environmental exposure to the contaminants of concern (COCs), reduce the mobility and migration of these contaminants and mitigate impacts to the local surface water and groundwater. The reclamation project plan involved removal of waste materials from designated areas and placement of them in a constructed repository located approximately 3 miles from the site.

Due to the short construction seasons at the Snowshoe Mine Site, the project was to be completed over a three-year period. The construction time for the Snowshoe Mine Reclamation Project was 306 consecutive calendar days with winter shutdown periods. The reclamation project started on September 12, 2007 and was completed on July 15, 2010. This Construction Completion Report documents the completion of the reclamation project.

1.2 LOCATION AND ACCESS

The project site is located within the Northwest Quarter, Section 7 of Township 28 North, and Range 31 West of the Montana Principal Meridian. The Snowshoe Mine Site is located 16.5 miles southeast of Libby, Montana, and is accessed by traveling south on Highway 2 from Libby, Montana, and then turning right (west) onto Bear Creek Road (FR 278), an improved gravel road. Approximately 3 miles from Highway 2, FR 867 veers to the southwest until meeting the intersection with FR 6213 approximately 5 miles from FR 278. The Snowshoe Mine Site is located approximately 3 miles west on FR 6213.

1.3 LAND OWNERSHIP

The project site is owned by three private landowners and the U.S. Department of Agriculture/ Forest Service (USFS). Access to the site (Snowshoe Creek Road) is owned by Lincoln County. To implement the Snowshoe Mine Site reclamation project, the Montana Department of Environmental Quality (DEQ) entered into access agreements with each of the landowners. The access agreements between each landowner can be found in Appendix A. Contact information for the landowners is as follows:

USFS
Northern Region
Federal Building
200 East Broadway
P.O. Box 7669
Missoula, MT 59807-7669
Contact: Nancy Rusho
Telephone: (406)-329-3634
Fax: (406)-329-3132

Lincoln County State of Montana
Main Courthouse
512 California Avenue
Libby, MT 59923
Contact: Dale Byers
Phone: (406)-293-7781
Fax: (406)-293-8577

Private Landowners

Alan W. Gloe
20540 Gleedville Road
Leesburg, VA 20175-6574

John, Cheryl, and Margaret Keith
1326 7th Avenue East
Kalispell, MT 59901-5926

William Faulkner
825 Goodrich Avenue
Saint Paul, MN 55105-3346

1.4 SITE HISTORY

The Libby Mining District started as a placer mining camp in 1867. After the discovery of the placer deposits (gold bearing gravels in stream beds), a search for the source of the Libby Creek gold resulted in the discovery of numerous hard rock mines in the district. In October 1889, Albert F. Dunlap and John G. Abbot located the rich galena ore deposits that would become the Snowshoe Mine. The Snowshoe Group of claims received their name when Abbot, locating claims in the snow, broke one of his snowshoes and had to spend several hours fixing it. The discovery was a series of rich ore veins (lodes) that consisted predominately of lead, zinc and silver. The Snowshoe Mine operated intermittently from 1889 to 1965 and was the most important lode producer in the Libby Mining District. Numerous companies operated the Snowshoe during its existence. A few of the more prominent included the Chicago and Montana Milling Company that purchased the Snowshoe claims in the early 1890's and in 1894

constructed the road up the Snowshoe Creek canyon and constructed the mill and other buildings in 1895. In 1898 the Pacific Northwest, a London Syndicate, purchased the mill but lost money and closed the mine in 1900. The mine operated through various owners including the Rustler Mining Company of Spokane which operated the mine from 1901 to 1910. Litigation and inefficient milling techniques led to the mining operations being intermittent during the life of the mine. The mine produced an estimated 145,000 tons of ore, which reduced to an estimated 400,000 ounces of silver, 20 million pounds of lead and 100,000 pounds of zinc. The concentrates (concentrated ore from the Snowshoe mill) were shipped as far away as the smelter in East Helena to be smelted. At the end of its operation history, the Snowshoe Mine had in excess of 10,000 feet of underground workings. The mine experienced two peak periods of operation from 1895 to 1905 and 1940 to 1945 fueled by the need for metals during World War II. Mining in the late 1800's was extremely dangerous and several miners were killed while working at the Snowshoe Mine. In one case a miner was killed in the mine when his pick struck a round of dynamite that failed to fire. To learn more about the history of mining around this area, including the Snowshoe Mine, please visit the Heritage Museum located at 34067 US Hwy 2 in Libby, Montana.
The mine employed up to 250 workers at one time and changed owners many times over the years; however, the property has been inactive since 1964. The current owners of the claims were not involved in the past mining activities and have no plans to re-open the mine.

1.5 PROJECT OBJECTIVES

The reclamation project was designed to reduce human, wildlife and environmental exposure to the COCs, as well as reduce the mobility of the contaminants and limit the impacts to the local surface water and groundwater resources. These objectives were achieved by removing the waste sources from within the floodplain of Snowshoe Creek. The solid media wastes were placed in a repository located 3 miles from the site. The repository consisted of a multi-layered impermeable cap. Clean amended cover soil, which was fertilized, seeded and mulched, was placed within the footprints of the removed wastes. In addition, Snowshoe Creek was reconstructed through the disturbed footprint.

2.0 RESPONSIBLE PARTIES

2.1 DEQ/MWCB COORDINATION

From 2006 through June 27, 2007, DEQ/MWCB Project Manager, Mrs. Autumn Coleman, Reclamation Specialist, was responsible for coordination of all planning phases of the project, as well as for providing technical and regulatory review during the alternatives evaluation, design process, development of the construction bid package and bidding process.

Montana Department of Environmental Quality/Mine Waste Cleanup Bureau
P.O. Box 200901
Helena, Montana 59620-0901
Telephone: 1-406-841-5029
Fax: 1-406-841-5050

From June 27, 2007 through January, 2009, DEQ/MWCB Project Manager, Mr. Ben Quiñones, Reclamation Specialist, was responsible for regulatory oversight and implementation of the construction project.

Montana Department of Environmental Quality/Mine Waste Cleanup Bureau
P.O. Box 200901
Helena, Montana 59620-0901
Telephone: 1-406-841-5030
Fax: 1-406-841-5050

From January 2009 through November 2010, DEQ/MWCB Project Manager, Mr. Steve Opp, Reclamation Specialist, was responsible for regulatory oversight, implementation, and completion of the construction project.

Montana Department of Environmental Quality/Mine Waste Cleanup Bureau
P.O. Box 200901
Helena, Montana 59620-0901
Telephone: 1-406-841-5030
Fax: 1-406-841-5050

2.2 U.S. DEPARTMENT OF AGRICULTURE/FOREST SERVICE COORDINATION

The reclamation at the Snowshoe Mine Site was conducted in cooperation with the USFS. A portion of the reclamation activities were performed on USFS property and in addition the repository location is located on USFS property. The USFS representatives and their roles in this project are listed below.

From 2006 through July 15, 2010, USFS Abandoned Mine Land (AML) Project Manager, Mrs. Nancy Rusho, was responsible for coordination between USFS and DEQ/MWCB during the planning phases of the project, as well as for providing technical and regulatory review during the design process, regulatory oversight, implementation, and completion of the construction project.

USFS
Northern Region
Federal Building
200 East Broadway
P.O. Box 7669
Missoula, MT 59807-7669
Telephone: 1-406-329-3634
Fax: 1-406-329-3132

From 2006 through June 2010, USFS Kootenai National Forest Representative, Mrs. Lynn Hagarty, was responsible for coordination between USFS and DEQ/MWCB during the planning phases of the project, as well as for providing technical review and Kootenai National Forest

comments during the design process, field oversight during the project, and final inspection of the completed construction project. From June 2010 through July 15, 2010, Bonnie Geber assumed the role of the USFS Kootenai National Forest Representative for the project.

USFS
Kootenai National Forest –Libby RD
12557 Hwy 37
Libby, MT 59923
Telephone: 1-406-283-7502
Fax: 1-406-283-7531

2.3 CONTRACTOR

The Contractor for the project was North Wind, Inc. (North Wind). The Contractor's address and telephone number are as follows:

North Wind, Inc.
1176 Big Creek Road
Kellogg, Idaho 83837
Telephone: (208) 783-1069

Mr. Kevin Redmond served as North Wind's Project Manager and Mr. Chris Richardson served as North Wind's on-site supervisor.

2.4 RECLAMATION AND ENGINEERING PLANNING

Under contract with the DEQ/MWCB, Pioneer Technical Services, Inc. (Pioneer) was responsible for planning and providing documentation necessary to facilitate resource managers with the appropriate decision-making tools necessary for full-scale reclamation at the site. Pioneer was also responsible for preparing the final design and engineering specifications for the reclamation project. Under contract with the DEQ/MWCB, Pioneer was responsible for construction oversight. The engineer's address and telephone number are as follows:

Pioneer Technical Services, Inc.
P.O. Box 3445
63½ West Broadway
Butte, Montana 59702
Telephone: 1-406-782-5177

2.5 CONSTRUCTION MONITORING AND QUALITY ASSURANCE INSPECTION

Pioneer performed the quality assurance (QA) inspection for the project. Mr. Doug Richmond and Chris Anderson functioned as the full-time, on-site inspectors. Mr. Joe McElroy, Mr. Joel Gerhart, Mr. Shawn Bisch, and Mr. Marty Bennett functioned as the design engineers, and Mr. McElroy functioned as the Project Manager.

3.0 CHRONOLOGICAL LISTING OF EVENTS

3.1 PRE-BID CONFERENCE

A Pre-Bid Conference was held at the project site on June 28, 2007. Ten contractors attended the Pre-Bid Conference. A copy of the Pre-Bid Conference agenda and meeting minutes is included in Appendix A.

3.2 BID DATE

The bid opening date for the project was July 13, 2007 at 2:00 p.m. at the DEQ/MWCB office, which is located at 1100 North Last Chance Gulch in Helena, Montana.

3.3 BID OPENING

Five qualified bidders responded with bids ranging from $3,697,958.50 to $8,137,000.00. The Engineer's estimate for the project was $2,346,830.25. The bids are summarized in Table 3-1.

3.4 CONTRACT AWARD

The Contract was awarded to North Wind, the lowest bidder for the project. A Pre-Award Conference was held in July 2007, at the DEQ/MWCB office, representatives from North Wind and DEQ/MWCB were present. The North Wind bid was discussed, along with their ability to complete the project on time. North Wind affirmed that they could complete the project for the amount bid, in the time frame specified (270 working days), and with the equipment listed. North Wind also assured DEQ/MWCB representatives that the subcontracted portion of North Wind's bid did not exceed 50% of the contract amount. Other items discussed included: project organization; site conditions and constraints; submittals; sequencing; equipment; and subcontractors. The Notice of Award was sent to North Wind by the DEQ/MWCB on July 25, 2007. The Notice of Award can be found electronically in Appendix A.

3.5 CONTRACT AGREEMENT

The Contract agreement with North Wind was signed on August 14, 2007. The Notice to Proceed was issued on August 23, 2007, with an immediate start date (no later than September 10, 2007). The Contractor was to complete all work within 270 consecutive calendar days not including winter shutdown periods and weather days. The original contract time was 270 consecutive calendar days and was increased by an additional 25 consecutive calendar days by Change Order #4 totaling a total contract time of 295 consecutive calendar days. The anticipated completion date was late October 2009. The Contract agreement can be found electronically in Appendix A.

3.6 CONSTRUCTION START-UP

A Pre-Construction Meeting was held at the project site on August 23, 2007. A copy of the Pre-Construction Meeting Minutes is included in Appendix A. The proposed North Wind construction schedule and sequencing was discussed. Other items discussed included the Health and Safety Plan, Quality Control Plan, Dust Control, Traffic Control Plan, Bridge Protection Plan, and numerous material submittals, temporary stream crossing, repository excavation, surveying needs, Snowshoe Creek road improvements, potential changes to Cherry Creek and Repository Road intersection, and fuel adjustment submittal. Bi-weekly progress meetings were scheduled for every other Wednesday at 8:00 a.m. during the constructions season. The meetings were held at the Venture Inn in Libby, Montana, with site visits after the meeting. North Wind stated that their normal work week would consist of five 10-hour days.

North Wind mobilized equipment to the site on September 10, 2007 and started work on September 12, 2007.

TABLE 3.1: Bid Summary for Snowshoe Mine Site Reclamation Project
Snowshoe Mine Contract 407053

BID TABULATION				Engineers Estimate		NorthWind Inc.		Pumco Inc.		EnviroCon		Shumaker Trucking & Excav.		Wilder Construction Company	
Bid Item	*ESTIMATED QUANTITY*	*UNIT*	*DESCRIPTION*		*TOTAL PRICE*	*UNIT PRICE*	*TOTAL PRICE*	*UNIT PRICE*	*TOTAL PRICE*	*UNIT PRICE*	*TOTAL PRICE*	*UNIT PRICE*	*TOTAL PRICE*		
1			**Mobilization, Demobilization, Bonding and Insurance**												
1	1	LS	Mobilization, Demobilization, Bonding, and Insurance	$213,352.75	$213,352.75		$356,526.00		$340,000.00		$398,355.00		$475,000.00		$977,000.00
2			**Cherry Creek and Repository Roads Improvement, Maintenance, and Repair**												
2a.	1	LS	Cherry Creek and Repository Roads	$8,000.00	$8,000.00		$82,757.00		$90,000.00		$190,003.00		$53,000.00		$54,920.00
2b.	1	LS	Install Leigh Creek Bridge Protection (Temporary)	$10,000.00	$10,000.00		$20,299.00		$20,000.00		$35,857.00		$20,000.00		$29,000.00
3			**Snowshoe Creek Road Improvement and Maintenance**												
3a.	1	LS	Improve/Maintain Snowshoe Creek	$30,000.00	$30,000.00		$198,528.00		$200,000.00		$230,150.00		$110,120.00		$333,000.00
3b.	13	EA	Install Culverts	$2,000.00	$26,000.00	$3,284.00	$42,692.00	$8,000.00	$104,000.00	$7,950.00	$103,350.00	$3,500.00	$45,500.00	$3,200.00	$41,600.00
3c.	1	LS	Install Temporary Stream Crosing	$25,000.00	$25,000.00		$23,881.00		$40,000.00		$22,300.00		$20,000.00		$85,000.00
4			**Excavate Repository and Stockpile Soil**												
4	50,900	CY	Excavate Repository and Stockpile Soil	$2.50	$127,250.00	$2.80	$142,520.00	$2.75	$139,975.00	$4.00	$203,600.00	$3.75	$190,875.00	$4.50	$229,050.00
5			**Install Temporary Stream Diversion**												
5	1	LS	Install Temporary Stream Diversion	$31,000.00	$31,000.00		$59,762.00		$50,000.00		$104,600.00		$25,000.00		$324,990.00
6			**Tailings Floodplain Dewatering**												
6a.	1	LS	Sediment Detention Pond	$23,000.00	$23,000.00		$30,344.00		$50,000.00		$44,400.00		$20,000.00		$205,000.00
6b.	1	LS	Groundwater Dewatering	$50,000.00	$50,000.00		$75,013.00		$50,000.00		$100,060.00		$25,000.00		$525,000.00
7			**Excavate, Load, Haul, Place, and Compact Mine Waste in Repository**												
7	115,000	CY	Excavate, Load, Haul, Place, and Compact Mine Waste in Repository	$8.00	$920,000.00	$14.50	$1,667,500.00	$13.00	$1,495,000.00	$13.90	$1,598,500.00	$21.00	$2,415,000.00	$25.00	$2,875,000.00
8			**Repair Waste Rock Dump #4**												
8a.	1,500	CY	Apply Amended Cover Soil	$8.00	$12,000.00	$7.00	$10,500.00	$9.50	$14,250.00	$19.80	$29,700.00	$17.50	$26,250.00	$35.00	$52,500.00
8b.	400	LF	Repair WR-4 Runon Control Ditch	$7.00	$2,800.00	$13.00	$5,200.00	$7.50	$3,000.00	$36.25	$14,500.00	$15.00	$6,000.00	$25.00	$10,000.00
8c.	170	LF	Install Riprap Stone Wall	$45.00	$7,650.00	$82.50	$14,025.00	$150.00	$25,500.00	$121.00	$20,570.00	$122.00	$20,740.00	$225.00	$38,250.00
8d.	100	LF	Replace Adit No. 6 Discharge Pipe	$30.00	$3,000.00	$62.00	$6,200.00	$50.00	$5,000.00	$157.50	$15,750.00	$75.00	$7,500.00	$350.00	$35,000.00
9			**Organic Amendment**												
9	1,183	Dry Ton	Organic Amendment	$200.00	$236,600.00	$148.00	$175,084.00	$250.00	$295,750.00	$163.00	$192,829.00	$250.00	$295,750.00	$330.00	$390,390.00
10			**Backfill Excavated Areas with Amended Cover Soil**												
10	18,000	CY	Backfill Excavated Areas with Amended Cover Soil	$8.00	$144,000.00	$7.70	$138,600.00	$11.00	$198,000.00	$6.00	$108,000.00	$17.50	$315,000.00	$19.00	$342,000.00
11			**Install Repository Cap**												
11a.	21,100	SY	Install Geo-cushion Over Compacted Mine Waste	$2.25	$47,475.00	$3.70	$78,070.00	$2.75	$58,025.00	$3.00	$63,300.00	$3.23	$68,153.00	$3.50	$73,850.00
11b.	21,100	SY	Install PVC Geomembrane	$4.20	$88,620.00	$4.20	$88,620.00	$3.89	$82,079.00	$5.10	$107,610.00	$4.56	$96,216.00	$5.00	$105,500.00
11c.	21,100	SY	Install Geocomposite	$4.70	$99,170.00	$3.50	$73,850.00	$4.84	$102,124.00	$5.90	$124,490.00	$5.68	$119,848.00	$6.00	$126,600.00
11d.	24,000	CY	Install Repository Cover Soil Cap	$1.50	$36,000.00	$4.00	$96,000.00	$3.50	$84,000.00	$2.70	$64,800.00	$4.00	$96,000.00	$8.00	$192,000.00
11e.	1	LS	Install Repository Storm Water Controls	$5,000.00	$5,000.00		$3,526.00		$15,000.00		$12,160.00		$5,000.00		$72,000.00
12			**Stream Recontruction**												
12a.	1,980	LF	New Stream Channel Consturction	$50.00	$99,000.00	$72.50	$143,550.00	$30.00	$59,400.00	$79.00	$156,420.00	$75.00	$148,500.00	$290.00	$574,200.00
12b.	22	EA	Grade Control Structures	$800.00	$17,600.00	$2,352.00	$51,744.00	$5,000.00	$110,000.00	$2,250.00	$49,500.00	$2,345.00	$51,590.00	$11,500.00	$253,000.00
12c.	1,800	EA	Mountain Alder (Alnus Tenuifolia) Shrub Tubelings	$3.25	$5,850.00	$4.80	$8,640.00	$5.60	$10,080.00	$5.50	$9,900.00	$25.00	$45,000.00	$6.00	$10,800.00
13			**Install Erosion Control Mat**												
13	900	SY	Install Erosion Control Mat	$4.00	$3,600.00	$4.80	$4,320.00	$10.17	$9,153.00	$11.80	$10,620.00	$4.00	$3,600.00	$20.00	$18,000.00
14			**Fertilize and Seed**												
14a.	15	AC	Upland Areas	$1,100.00	$16,500.00	$931.50	$13,972.50	$776.25	$11,643.75	$1,805.00	$27,075.00	$700.00	$10,500.00	$750.00	$11,250.00
14b.	2	AC	Riparian Areas	$1,300.00	$2,600.00	$2,860.00	$5,720.00	$2,755.00	$5,510.00	$4,000.00	$8,000.00	$2,500.00	$5,000.00	$3,000.00	$6,000.00
15			**Mulch**												
15a.	16	AC	Straw	$1,200.00	$19,200.00	$2,173.00	$34,768.00	$2,095.00	$33,520.00	$2,200.00	$35,200.00	$1,000.00	$16,000.00	$3,800.00	$60,800.00
15b.	1	AC	Hydromulch	$2,000.00	$2,000.00	$2,173.00	$2,173.00	$2,095.00	$2,095.00	$1,900.00	$1,900.00	$5,000.00	$5,000.00	$3,800.00	$3,800.00
16			**Construct WR-4 Parking Area and Gravel Path**												
16	1	LS	Contruct WR-4 Parking Area and Gravel Path	$6,500.00	$6,500.00		$16,664.00		$25,000.00		$18,000.00		$17,500.00		$19,500.00
17			**Install Bat-Friendly Adit Closures**												
17	2	EA	Install Bat-Friendly Adit Closures	$5,000.00	$10,000.00	$8,740.00	$17,480.00	$12,000.00	$24,000.00	$5,100.00	$10,200.00	$5,000.00	$10,000.00	$19,000.00	$38,000.00
18			**Install Construction BMP's**												
18a.	1,300	LF	Install Compost Filter Sox	$7.50	$9,750.00	$2.60	$3,380.00	$7.20	$9,360.00	$9.90	$12,870.00	$7.00	$9,100.00	$10.00	$13,000.00
18b.	1,375	LF	Install Silt Fence	$7.50	$10,312.50	$4.40	$6,050.00	$7.20	$9,900.00	$7.00	$9,625.00	$5.00	$6,875.00	$8.00	$11,000.00
				TOTAL BID =	$2,348,830.25	TOTAL BID =	$3,697,958.50	TOTAL BID =	$3,771,364.75	TOTAL BID =	$4,134,194.00	TOTAL BID =	$4,784,617.00	TOTAL BID =	$8,137,000.00

3.7 PROJECT SUBMITTALS

Prior to the start of construction, North Wind provided the required submittals as specified in the Pre-Construction Meeting and the Special Provisions. The submittal process was ongoing throughout the completion of the Snowshoe project. Prior to starting a project task, North Wind submitted the required materials submittals, plans, and certifications to the Engineer for approval. The reviewed and approved project submittals for the Snowshoe Reclamation Project are provided electronically in Appendix A.

3.8 CONSTRUCTION OVERVIEW

North Wind started work on September 12, 2007 and completed all construction activities on July 1, 2010. The work was completed over 4 construction seasons with winter shutdowns typically from mid October to June 15 of each year.

The 2007 construction season started on September 10, 2007 and consisted of improvements to the Snowshoe Creek Road, installing 12 culverts along the Snowshoe Creek Road, clearing and grubbing of the repository footprint, excavating the repository, installing the required jersey barriers, installing steel plates on Leigh Creek Bridge, installing filter sox, installing road mix on Big Cherry Creek Road, and fertilizing, seeding, and mulching steep slopes along the Snowshoe Creek and repository roads and the areas surrounding the dozer basins. Work was stopped for the season and equipment was demobilized for the winter on November 2, 2007.

The 2008 construction season started on June 16, 2008 and consisted of installing temporary stream crossing, clearing and grubbing for the stream diversion, repairing Snowshoe Creek Road, installing additional Best Management Practices (BMPs), constructing temporary haul road between Big Cherry Creek Road and Repository Road, constructing stream diversion, constructing dewatering sumps, installing dewatering pumps, constructing the sediment detention pond, installing vehicle decontamination stations, excavating and stockpiling mine wastes, transporting mine wastes to repository, placing mine wastes in repository, excavating initial Snowshoe Creek channel, installing silt fence, installing grade controls in Snowshoe Creek, and constructing a sediment basin at the repository. Work was completed on October 17, 2008 and equipment mobilized from the site for winter shutdown.

The 2009 construction season started on June 15, 2009 and consisted of repairing Snowshoe Creek Road, repairing BMPs, loading and transporting mine wastes to repository, spreading and compacting mine wastes in repository, delivering compost to the repository, backfilling excavation with amended cover soils, excavating mine wastes from area adjacent to Turnout #7, excavating mine waste adjacent to temporary crossing, installing geosynthetic liner and soil cap over repository, obliterating temporary haul road between Big Cherry Creek Road and repository road, reconstructing Snowshoe Creek stream channel, constructing Waste Rock #4 (WR-4) runoff channel and grade controls, planting mountain alder tubelings, installing straw wattles and erosion control mat as BMPs, and fertilizing, seeding, and hydromulching specified areas. Due to extreme weather conditions and frozen ground, the final fertilizing, seeding, and straw mulching could not be performed. Work was stopped for the construction season on November 6, 2009.

The 2010 construction season started on June 22, 2010 and consisted of installing two adit closures, fertilizing, seeding and straw mulching the upper mine site and repository, installing one culvert, obliterating access points at the upper mine site, spreading wood debris across repository and upper mine site, loading and transporting amended cover soil to Big Cherry Creek repository, spreading amended cover soils and Big Cherry Creek repository and installing a kelly hump. Work was completed on July 1, 2010. Final inspection was conducted on July 15, 2010.

3.9 WORK DIRECTIVE CHANGES

Over the duration of the Snowshoe Mine Site Reclamation Project there were 11 Work Directive Changes that were executed. Eight of these Work Directive Changes led to the change orders outlined in the section below. The executed Work Directive Changes can be found in Appendix A.

3.10 CHANGE ORDERS

Eight change orders were issued for the project. Copies of the change orders are included in Appendix B. Change Orders 1 through 8 decreased the total contract amount by $360,377.22.

Change Order #1: required installing thirteen 16-gauge trash racks on the inlets to the culverts installed along the Snowshoe Creek Road and obliterating the road to the monitoring well located at the repository. This Change Order was initiated to minimize the debris flow through the culverts and assist in future maintenance efforts. Obliterating the road to the monitoring well at the repository was an agreement between DEQ/MWCB and the USFS. This Change Order added a total of $12,515.96 to the Contract amount and did not increase the contract time.

Change Order #2: required that the Snowshoe Creek Road be narrowed to a total width of 16 feet at the request of the adjacent landowner. Based on complaints by Mr. Iovino, the DEQ/MWCB agreed to narrow the Snowshoe Creek Road to a width of 16 feet. He claimed that he was promised, prior to construction activities, that the road would not exceed a width of 16 feet. During the improvements of the Snowshoe Creek Road, along the Iovino property, the Contractor did not widen the existing road width but vegetation was cleared along the edge. Therefore, the Contractor was instructed to narrow Snowshoe Creek road to a width of 16 feet. Work was conducted utilizing an E325 track excavator. The work consisted of pulling the edge of the road back to a width of 16 feet and creating a small berm. The disturbed area was roughened and fertilized, seeded, and hydro mulched. Fertilizing, seeding, and hydro mulching was conducted under Work Directive Change No. 1. This Change Order added a total of $849.32 to the Contract amount and did not increase the Contract time.

Change Order #3: To mitigate rough condition and dust along the Cherry Creek Road from FR 278 to the intersection of FR 867 and the repository road. North Wind, Inc. was requested to water and grade the existing Cherry Creek Road surface from FR 278 to the intersection of FR 867 and the repository road. North Wind, Inc. was requested to perform the work in the spring and fall of the year for the remainder of the project. This equated to watering and grading the road four times. The work did not include the addition of road surface materials.

Due to construction sequencing, an additional 425 linear feet of silt fence was required for the winter shutdown for Construction Schedule 2. North Wind, Inc. was directed by the Engineer and DEQ/MWCB to install the additional silt fencing.

This Change Order also compensated North Wind, Inc. for fuel price adjustments for Bid Item #7 "Excavate, Load, Haul, and Compact Mine Waste in Repository" according to the Fuel Adjustment Request Forms submitted by the Contractor on August 22, 2007 and the Fuel Price Adjustment Calculation Forms attached to Pay Requests #4 and #5.

This Change Order increased the Contract amount by $74,973.29 and did not increase the overall Contract time.

Change Order #4: The addition of grade control structures on the WR-4 run-on control ditch were necessary to stabilize the soil conditions observed along the WR-4 ditch alignment. Soil conditions along the ditch alignment consisted of fine-grained materials that would be acceptable to erosion given the steep grades of the ditch. To keep the ditch in its proposed location and maintain the ditch configuration, it was determined that grade control structures would be installed. The installation of the grade control structures would maintain the ditch alignment and reduce future erosion and cutting within the ditch. North Wind, Inc. was instructed to install 11 grade control structures along the WR-4 run-on control ditch.

During the excavation of the mine waste at the mine site and construction of the stream diversion, a large quantity of wood debris and trees were encountered and piled on-site for future disposal. The disposal of this wood debris at the mine site was not included in the contract. Burning the wood debris was considered as a disposal option; however, was considered a liability given the time frame. Therefore, it was determined by DEQ/MWCB and USFS representatives that the wood debris would be scattered along the WR-4 area where possible and the remaining would be loaded and hauled to the repository where it would be unloaded and stacked in piles to be burned by the USFS in the fall of 2009 or spring of 2010. North Wind, Inc. was instructed to spread wood debris along WR-4 and as directed by the Engineer. The remaining wood debris was loaded and hauled to repository for later burning.

A substantial amount of mine wastes were observed between the east boundary of the excavation and the temporary bridge crossing for Snowshoe Creek. The mine wastes were located on USFS property and were located within the Snowshoe Creek floodplain. After inspection of the site, it was determined by DEQ/MWCB and the USFS that the mine wastes would require removal from the Snowshoe Creek floodplain. The removal of these mine wastes would complete reclamation efforts from the mine site to just below the temporary crossing at Snowshoe Creek. The Contractor was instructed to remove the associated wood debris and mine wastes within the Snowshoe Creek floodplain discovered on the USFS property located north of turnout T-7 of the Snowshoe Creek Road.

This Change Order increased the Contract amount by $84,558.00 and increased the overall Contract time by 25 consecutive calendar days.

Change Order #5: To mitigate erosion of amended soils placed at the upper tailings site during the winter shutdown period. North Wind, Inc. was instructed to provide and install an additional 7,100 square yards of erosion control mat on amended soils placed on WR-4 (approximately 1 acre) and on the north side of the newly constructed Snowshoe Creek from Station 7+00 to Station 12+00 (approximately 0.6 acres).

The installation of erosion control mat and straw wattles along both sides of Snowshoe Creek was implemented as BMPs to control storm water runoff during the winter shutdown period at the Snowshoe Site. The Contractor was instructed to provide and install approximately 4,200 linear feet of straw wattles along both banks of Snowshoe Creek to minimize erosion and control discharge of sediment to Snowshoe Creek during the 2009 winter shutdown period.

After excavation of tailings and mine waste materials over the proposed new Snowshoe Creek alignment, it was determined that the existing rock subgrade was equivalent to the stream bed stone that was to be provided by the Contractor to reconstruct the new Snowshoe Creek alignment through the site. The Contractor was directed to reconstruct Snowshoe Creek utilizing the existing subgrade materials. The use of the native existing rock subgrade at the site met the criteria for the stream bed stone. The use of the native materials was better than utilizing a streambed stone imported from another location. The DEQ/MWCB requested a reduction from North Wind, Inc. for the use of the native materials instead of the specified imported stream bed stone.

At the completion of excavating the tailings and mine wastes from the Snowshoe Mine Site the actual quantity of tailings and mine wastes that were excavated, loaded, hauled and placed in the repository was 64,090 bank cubic yards, which was 50,910 bank cubic yard less than the estimated quantity of 115,000 bank cubic yards as specified in the Contract. This Change Order item was to address the variation in the estimated quantities for Bid Item #7-Excavate, Load, Haul, and Place Wastes in Repository. The actual quantities equated to a 44.3% reduction in the estimated quantity. Under Standard General Conditions of the Construction Contract, Article 11, Section 11.03, the unit price of an item is subject to re-evaluation if the actual quantity of that item of Unit Price Work differs from the estimated quantity by more than 25%. An adjusted Unit Price for Bid Item #7-Excavate, Load, Haul, and Place the Wastes in Repository, was negotiated between North Wind, Inc. and DEQ/MWCB. Based on the negotiations, the unit price for Bid Item #7-Excavate, Load, Haul, and Place the Wastes in Repository was increased by an additional $3.90 per cubic yard, or a total adjusted unit price of $18.40 per cubic yard for Bid Item 7. This Change Order item reflected the upward adjustment of $3.90 per cubic yard over 64,090 cubic yards for a total increase of $249,951.00.

This Change Order decreased the Contract amount by $470,559.00 and did not increase the overall Contract time.

Change Order #6: Was an attempt to reconcile the contract quantities at the end of the 2009 construction season. This Change Order decreased the Contract amount by $78,358.10 and did not increase the overall Contract time.

Change Order #7: North Wind, Inc. was instructed to stockpile an estimated 600 cubic yards of amended soils at the Snowshoe repository site and load and haul the material to the Big Cherry Reclamation Site located 3 miles away as requested by the USFS. North Wind, Inc. was instructed to remove wood debris in the area outlined by USFS representatives and spread amended soils across the designated area. Upon completion of spreading the amended soils, North Wind, Inc. was instructed to replace wood debris back on the area, rip the access road and reinstall the kelly hump at the site entrance. Work included the required dust control and traffic management required to implement the work.

This Change Order increased the Contract amount by $26,000.00 and did not increase the overall Contract time.

Change Order #8: Reconciled the Contract quantities at the end of the 2010 construction season. This Change Order decreased the Contract amount by $6,846.69 and did not increase the overall Contract time.

3.11 WORK STOPPAGES

There were three official work stoppages during the project. These work stoppages were for winter shutdowns. The winter shutdown for the 2007 construction season was between November 1, 2007 and June 16, 2008. The winter shutdown for the 2008 construction season was between October 17, 2008 and June 15, 2009. The winter shutdown for the 2009 construction season was between November 6, 2009 and June 22, 2010. There were no other work stoppages during the project.

3.12 WORK SLOWDOWN

During the weekend of July 4, 2008, a moose entered the constructed Snowshoe Creek diversion and damaged the polyvinyl chloride (PVC) liner that was installed by the Contractor. The damage required re-lining of the stream diversion channel. This reconstruction of the stream diversion slowed the groundwater dewatering and excavation of mine waste materials from the Snowshoe Creek floodplain.

For the 2008 construction season, North Wind, Inc. selected to utilize 18-cubic yard belly dump trailers and trucks to haul tailings and mine wastes from the mine site to the repository location. The tailings materials encountered when excavating the designed pond area between Stations 12+00 to 18+50 were wet and very plastic. When loaded into the belly dump trailers and transported to the repository location, the materials settled and it was difficult to unload the materials from the trailers. Also, when the wet tailings materials were spread out in the repository, the conventional trucks were continually getting stuck. North Wind, Inc. opted to stockpile the wetter materials into the repository to allow them the dry before placing and compacting the materials into the repository. However, once the compacted materials got wet with precipitation, it was impossible for the trucks to drive and place materials in the repository. Due the difficulties encountered with the wetter materials and the wet weather conditions encountered during the months of September and October 2008, North Wind, Inc. opted to remove all the tailings and stockpile them at the upper mine site to dry over the winter and

shutdown in October 2008 to conserve contract days and investigate alternate hauling equipment for the 2009 construction season. Stockpiling the large quantity of mine wastes at the upper mine site required the installation of additional BMPs. Work was stopped approximately two weeks early and the difficulties resulted in a minimum of two weeks of lost production.

Due to an early snow storm on October 12, 2009 at the mine site and repository, seeding, fertilizing, and mulching were delayed at the site. Work continued to October 16, 2009 to complete project punch list items. Soil conditions were not favorable for seeding, fertilizing, and mulching, therefore, North Wind shutdown temporarily to conserve contract days. North Wind returned on November 3, 2009 to plant mountain alder tubelings, fertilize, seed, and hydro-mulch the designated areas, and install erosion control mat on WR-4 and a portion of the north bank of Snowshoe Creek. Due to freezing soil conditions, the project was shutdown on November 6, 2009 for the winter and the remaining fertilizing, seeding, straw mulching, and adit closures delayed until the 2010 construction season.

Weather conditions slowed the work on the Snowshoe Mine Site Reclamation Project. During the project there were 26 weather days. There was 1weather day in 2007, 7 days in 2008, and 18 days in 2009. The following are a list of the documented weather days: October 19, 2007, August 21, 2008, August 22, 2008, August 26, 2008, August 27, 2008, September 22, 2008, September 23, 2008, September 24, 2008, October 12, 2009, and October 17, 2009 through November 2, 2009.

3.13 REQUESTS FOR PAYMENT

North Wind, Inc. issued 12 Requests for Payment for the project. Copies of the Requests for Payment are included in Appendix C.

Pay Request #1 for $347,949.54 less retainages for the Work completed from project start-up through October 19, 2007.

Pay Request #2 for $137,886.91 less retainages for the Work completed from October 20, 2007 through November 16, 2007.

Pay Request #3 for $97,489.85 less retainages for the Work completed from June 16, 2008 through June 30, 2008.

Pay Request #4 for $347,884.87 less retainages for the Work completed from July 1, 2008 through August 14, 2008.

Pay Request #5 for $536,357.54 less retainages for the Work completed from August 15, 2008 through September 26, 2008.

Pay Request #6 for $104,016.28 less retainages for the Work completed from September 27, 2008 through October 17, 2008.

Pay Request #7 for $289,428.90 less retainages for the Work completed from October 18, 2008 through June 30, 2009.

Pay Request #8 for $697,944.42 less retainages for the Work completed from July 1, 2009 through September 19, 2009.

Pay Request #9 for $349,024.73 less retainages for the Work completed from September 20, 2009 through November 6, 2009.

Pay Request #10 for $233,556.00 less retainages for the Work completed from November 6, 2009 through December 18, 2009.

Pay Request #11 for $194,294.07 less retainages for the Work completed from December 19, 2009 through June 30, 2010.

Pay Request #12 for $174,653.35 which included releasing $167,522.52 for prior retainages held. Pay Request #12 was for Work completed from July 1, 2010 through July 15, 2010.

3.14 SUBSTANTIAL COMPLETION

On November 17, 2009, a site inspection was conducted by Steve Opp and John Koerth of DEQ, Joe McElroy of Pioneer, and Kevin Redmond and Chris Richardson of North Wind to determined if project had been substantially completed by North Wind. Based on the site inspection the project was found to be substantially completed. Therefore, allowing the release of the Contractor's performance bond for the project. A completed Certificate of Substantial Completion can be found electronically in Appendices.

3.15 FINAL PROJECT INSPECTION AND APPROVAL

A final project inspection was conducted on July 15, 2010 by Steve Opp of the DEQ/MWCB, Joe McElroy and Shawn Bisch of Pioneer, Kevin Redmond of North Wind Inc., Nancy Rusho and Lynn Hagarty of the USFS. The final inspection determined that all construction activities were adequately completed per the specifications issued for the Snowshoe Mine Site Reclamation Project, and the project was recommended for approval. Project completion certificates can be found electronically in Appendices.

4.0 CONSTRUCTION

4.1 SUMMARY OF THE PROJECT

The project consisted of the following:

- Improving the existing access roads;
- Constructing a mine waste disposal repository;
- Installing a temporary stream diversion;

- Installing a access bridge across Snowshoe Creek;
- Dewatering, excavating, loading, hauling, placing, and compacting approximately 64,090 cubic yards of waste materials in the constructed repository;
- Backfilling the waste excavation areas with amended cover soils;
- Reconstructing approximately 1,990 lineal feet of the Snowshoe Creek channel and floodplain;
- Regrading/constructing approximately 400 lineal feet of storm water runoff control ditch;
- Installing approximately 100 lineal feet of riprap along WR-4;
- Regrading and revegetating all disturbed areas;
- Closing 2 existing mine adits; and
- Installing rock barricades.

The excavated areas at the mine site was graded to drain and covered with 12 to 24 inches of amended cover soil and revegetated (fertilized, seeded, and mulched). The repository was capped with geosynthetic materials including a PVC geomembrane liner and 36 inches of cover soil. The repository cap was fertilized, seeded, and mulched. A small parking area was constructed near WR-4.

Roadways were improved or constructed to provide access to project areas. Roads improved for the purpose of this project were left in a condition equal to the status of the current road, with the exception of the Snowshoe Creek Road (FR 6213) which conformed to the stipulations set forth in the Agreement between the State of Montana, DEQ/MWCB and Lincoln County which are provided in Appendix A. Roads constructed to provide internal access at the project site and repository were obliterated and reclaimed immediately after construction activities.

4.2 MAJOR EQUIPMENT LIST

Table 4-1 lists the major pieces of equipment used on this project.

TABLE 4-1
EQUIPMENT USED AT SNOWSHOE MINE SITE
RECLAMATION PROJECT

TYPE	MAKE/MODEL	SIZE/CAPACITY
Track Excavator	Komatsu PC400	3.0-cy bucket
Track Excavator	Komatsu PC220	1.0-cy bucket
Track Excavator	Caterpillar 320C	1.0-cy bucket
Track Excavator	Komatsu PC270	1.0-cy bucket
Mini Excavator	John Deere 35D	
Grader	Caterpillar 140H	
Grader	Caterpillar 12G	
Track Bulldozer	Caterpillar D6R	
Track Bulldozer	Komatsu D65	
Track Bulldozer	Caterpillar D4	
Compactor	Caterpillar 563	
Wheeled Loader	Komatsu WA450	5-cy bucket
Off-Road Trucks	Caterpillar 725	17 cy
Off-Road Trucks	Caterpillar 735	26 cy
Belly Dumps (up to 6 at a time)	Kenworth	18 cy
10-wheeled Dump Truck (up to 6 at a time)	Kenworth	12 cy
Water Truck		4,000-gallon capacity

*cy – cubic yards

4.3 CONTRACTOR EMPLOYEES

The Contractor utilized from 3 to 6 employees on the project site at various times; the majority of the labor involved three equipment operators, with the remaining personnel performing general labor tasks and operating equipment as necessary.

4.4 SUBCONTRACTORS

During the implementation of the project, North Wind, Inc. utilized the following subcontractors to complete specific project tasks.

Noble Excavating, Inc.
120 Jay Effar Road
Libby, MT 59923
Contact: Chris Noble
Phone #: 406-293-8824

Project Tasks: Snowshoe Road improvement and maintenance, repository excavation, transportation of mine wastes to repository, and placing and compacting wastes in the repository.

Quality Landscaping Seeding, Inc.
191 Lower Lynch Creek Road
Plains, MT 59859
Contact: Lisa Read
Phone #: 406-826-7300
Project Tasks: Installed filter soxx, fertilized, seeded, and mulched.

Northwest Linings & Geotextile Products, Inc.
21000 77th Avenue
Kent, WA 98032
Phone #: 253-872-0244
Project Tasks: Installed Geochusion, PVC Geomembrane, and Geocomposite.

Horizon Helicopters, Inc
PO Box 29
Laclede, ID 83841-0029
(208) 265-4881
Project Task: Transported fabricated closures to designated adit locations.

4.5 CONSTRUCTION ACTIVITIES

4.5.1 Project Oversight

During construction, Pioneer provided project oversight for the Snowshoe Mine Site Reclamation Project. The responsibility of the oversight personnel is to ensure that the Contractor is implementing the work as specified in the construction bid document and communicate discrepancies to the Engineer, Owner, and the Contractor. In addition, the oversight personnel documented the implementation of the project. This documentation consists of daily field notes. The daily field notes for the Snowshoe Mine Site Reclamation Project are in Appendix D.

4.5.2 Quality Assurance

During the construction activities, it is necessary to perform QA measures to ensure the project was being implemented as specified in the Construction Bid Package. These QA measures at the Snowshoe Mine Site consisted of sampling amended cover soils for organic matter content, sampling compost for moisture content, sampling for geotechnical parameters (soil proctors), compaction testing of the structural fill and repository materials, sampling of on-site riprap, surface water sampling, and sampling of tailings materials utilizing an X-ray Fluorescence (XRF). Laboratory data sheets and results for the sampling and testing conducted during the construction activities at the Snowshoe Mine Site Reclamation Project can be found electronically in Appendix E.

4.5.3 Project Information

Additional project information collected to document the project includes geosynthetic certifications, compost scale tickets, seed tickets, and straw weed free certifications. This project information can be found electronically in Appendix F.

4.5.4 Bi-Weekly Progress Meetings

Bi-weekly progress meetings were held during the Snowshoe Mine Site Reclamation Project. The progress meetings were held at the Venture Inn located in Libby, Montana. The dates and location of the weekly progress meeting were mutually agreed upon by the Contractor, Owner, and Engineer and were typically held at 8:00 a.m. on every other Wednesday during the project. North Wind, Inc. prepared an agenda and conducted each bi-weekly progress meeting. The meetings identified decisions required, scheduling, milestones accomplished, opportunities, problems, and corrective actions. Each meeting included a discussion of the work to be done in the two weeks following the meeting (two-week look-ahead). The bi-weekly progress meeting agenda and meeting notes are included electronically in Appendix G.

4.5.5 Daily Activities

The paragraphs in Section 3.8 – Construction Overview summarize the construction events in chronological order for the Snowshoe Mine Site Reclamation Project. A detailed description of the daily construction activities are included electronically in the Daily Project Logs in Appendix H, and North Wind's Construction Daily Activity Reports are provided electronically in Appendix I.

4.5.6 Construction Photographs

Daily construction photos were taken by oversight personnel to document construction activities and the implementation of the project. The photographs have been assembled in to daily photo logs and provided electronically in Appendix J.

5.0 QUANTITIES USED

5.1 PROJECT SUMMARY

The project was completed in 306 consecutive calendar days, for a total cost of $3,337,581.29. Table 5-1 summarizes the final quantities and costs associated with each pay item. Table 5-1 also lists the Change Orders (modifications) that were not part of the original contract.

TABLE 5-1
SNOWSHOE MINE SITE RECLAMATION PROJECT
FINAL COST SUMMARY

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	TOTAL COST
1. Mobilization, Demobilization, Bonding, and Insurance				
1	Mobilization, Demobilization, Bonding, and Insurance	LS	1.00	$356,526.00
2. Cherry Creek and Repository Improvement, Maintenance, and Repair				
2a.	Cherry Creek and Repository Roads	LS	1.00	$82,757.00
2b.	Install Leigh Creek Bridge Protection (Temporary)	LS	1.00	$20,299.00
3. Snowshoe Creek Road Improvement and Maintenance				
3a.	Improve/Maintain Snowshoe Creek Road	LS	1.00	$198,528.00
3b.	Install Culverts	EA	12.00	$39,408.00
3C.	Install Temporary Stream Crossing	LS	1.000	$23,881.00
4. Excavate Repository and Stockpile Soil				
4	Excavate Repository	CY	53,500.00	$149,800.00
5. Install Temprary Stream Diversion				
5	Install Temporary Stream Diversion	LS	1.000	$59,762.00
6. Tailings Floodplain Dewatering				
6a.	Sediment Detention Pond	LS	1.00	$30,344.00
6b.	Groundwater Dewatering	LS	1.00	$75,013.00
7. Excavate, Load, Haul, Place, and Compact Mine Waste in Repository				
7.	Excavate, Load, Haul, Place, and Compact Mine Waste in Repository	CY	64,090.00	$915,297.64
8. Repair Waste Rock Dump #4				
8a.	Apply Amended Cover Soil	CY	1,432.00	$10,024.00
8b.	Repair WR-4 Runon Control Ditch	LF	306.00	$3,978.00
8c.	Install Riprap Stone Wall	LF	100.00	$8,250.00
8d.	Replace Adit No. 6 Discharge Pipe	LF	0.00	$0.00
9. Organic Amendment				
9	Organic Amendment	DRY TON	1,202.84	$172,512.73
10. Backfill Excavated Areas with Amended Cover Soil				
10.0	Backfill Excavated Areas With Amended Cover Soil	CY	14,083.00	$105,059.18
11. Install Repository Cap				
11a.	Install Geo-cushion Over Compacted Mine Waste	SY	19,396.65	$71,767.61
11b.	Install PVC Geomembrane	SY	19,862.86	$83,424.01
11c.	Install Geocomposite	SY	19,630.00	$68,705.00
11d.	Install Repository Cover Soil Cap	CY	24,034.00	$93,120.92
11e.	Install Repository Storm Water Controls	LS	1.00	$3,526.00
12. Stream Reconstruction				
12a.	New Stream Channel Construction	LF	1,987.00	$139,556.88
12b.	Grade Control Structures	EA	22.00	$51,744.00
12c.	Mountain Alder (Alnus Tenuifolia)	EA	1,808.00	$8,678.40
13. Install Erosion Control Mat				
13.	Install Erosion Control Mat	SY	959.00	$4,603.20
14. Fertilize and Seed				
14a.	Upland Areas	AC	21.70	$20,213.55

TABLE 5-1
SNOWSHOE MINE SITE RECLAMATION PROJECT
FINAL COST SUMMARY

PAY ITEM NO.	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	TOTAL COST
14b.	Riparian Areas	AC	0.60	$1,716.00
15. Mulch				
15a.	Straw	AC	16.00	$34,768.00
15b.	Hydromulch	AC	3.00	$6,519.00
16. Construct WR-4 Parking Area and Gravel Path				
16.0	Construct WR-4 Area and Gravel Path	LS	1.00	$16,664.00
17. Install Bat-Friendly Adit Closures				
17.0	Install Bat-Friendly Adit Closures	EA	2.00	$17,480.00
18. Install Construction BMP's				
18a.	Install Compost Filter Sox	LF	1,533.00	$3,985.80
18b.	Install Silt Fence	LF	1,447.00	$6,366.80
CHANGE ORDERS				
1.0	Trash racks and exc time	LS	1.00	$9,005.96
2.0	Snowshoe Rd Narrowing	LS	1.00	$849.32
3.0	Cherry Ck Road Blading	EA	4.00	$9,600.00
3.0	Fuel Adjustment (7/1/08 to 8/14/08)	LS	1.00	$31,329.41
3.0	Fuel Adjustment (8/16/08 to 9/26/08)	LS	1.00	$32,173.88
3.0	Install Additional Silt Fence	LF	425.00	$1,870.00
4.0	Installation additional grade controls	EA	11.00	$25,872.00
4.0	Load, Haul, & Place wood Debris	LS	1.00	$31,757.00
4.0	Reclaim additional areas at locatio T-7	LS	1.00	$26,929.00
5.0	Install Additional Straw Wattles	LF	4,200.00	$10,920.00
5.0	Decrease for stream bed stone per Work Directive #9	LS	1.00	($27,315.00)
5.0	Reduce estimated quantity for Bid Item 7 per Change Order #5	CY	0.00	$0.00
5.0	Increase to Bid Item 7 unit price per Change Order #5	CY	64,090.00	$249,951.00
5.0	Install additional erosion control mat	SY	5,075.00	$24,360.00
7.0	Increase for hauling cover soil to Big Cherry Site	LS	1.00	$26,000.00
TOTAL COST				**$3,337,581.29**

6.0 TOTAL PROJECT COSTS

The total construction cost for the Snowshoe Mine Site reclamation project was $3,337,581.29. North Wind's original bid was $3,697,958.50; eight change orders were issued resulting in a decrease of $360,377.22.

The total engineering costs for the project, including site characterization and environmental investigation was $561,937.60. Costs associated with the site investigations and the preparation of the *Draft Expanded Engineering Evaluation/Cost Analysis (EEE/CA) for the Snowshoe Mine Site* (DEQ/MWCB-Pioneer, 2005) was $79,905.71. Costs for engineering design and bid specification preparation were $77,618.18. Construction inspection and management costs were $404,413.71.

An analysis of the site characterization, engineering, and construction costs for the project is presented in Table 6-1. The total project cost was $3,899,518.88. The percent of total project site characterization, engineering and management costs compared to total project construction costs was 14.4%.

TABLE 6-1
ANALYSIS OF ENGINEERING AND CONSTRUCTION COSTS FOR SNOWSHOE MINE SITE RECLAMATION PROJECT

SITE CHARACTERIZATION AND ENGINEERING SERVICES	AMOUNT
Site Investigation and EEE/CA Preparation	$79,905.71
Engineering Design and Bid Specification Preparation	$77,618.18
Construction Inspection and Management	$404,413.71
Total Engineering Costs	**$561,937.60**
CONSTRUCTION SERVICES	
North Wind Original Contract	$3,697,958.50
CHANGE ORDERS	($360,377.22)
Total Construction Costs	**$3,337,581.29**
TOTAL PROJECT COST (Engineering and Construction)	**$3,899,518.88**
Planning-Characterization/Construction Cost	2.4%
Engineering Design/Construction Cost	2.3%
Construction Management/Construction Cost	12.1%
Total Engineering Cost/Construction Cost	**16.8%**
TOTAL ENGINEERING COST/TOTAL PROJECT COST	**14.4%**

7.0 POST CONSTRUCTION

7.1 SITE CONDITIONS AFTER COMPLETION

The Snowshoe Mine Site Reclamation Project is 100% completed. All of the contamination sources that were responsible for negatively impacting Snowshoe Creek have been capped in-place (WR-4) or permanently removed from the Snowshoe Creek floodplain from the toe of WR-4 to just below the permanent stream crossing on Snowshoe Creek, which alleviates the environmental problems associated with the site. In addition, two adits have been closed with bat friendly closures.

7.2 MAINTENANCE OR FOLLOW-UP

Follow-up or maintenance of the site will be determined based on post-reclamation monitoring.

7.3 AS-BUILT DRAWINGS

Pioneer prepared the As-Built Drawings based on field survey data and field notes. The As-Built Drawings represent the site conditions after completion of construction activity. The As-Built Drawings are provided in hard copy as Appendix L.

8.0 REFERENCES

DEQ/MWCB-Pioneer, 2005. Draft Snowshoe Mine Site Consolidated Expanded Engineering/Cost Analysis (EEE/CA). Prepared by Pioneer Technical Services, Inc. April 2005.

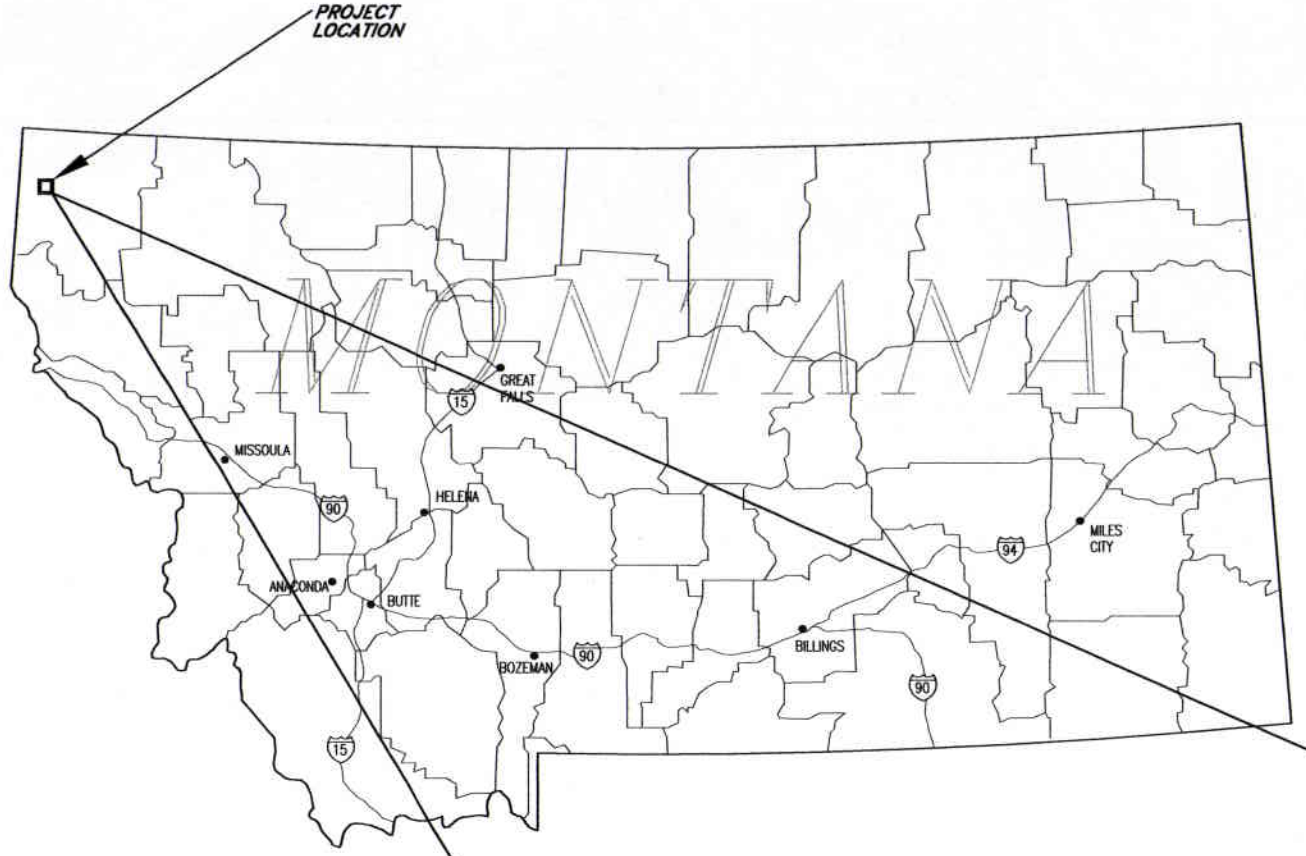
DEQ/MWCB-Pioneer, 1995. Montana Department of State Lands, Abandoned Mine Reclamation Bureau of Abandoned Hardrock Mine Priority Sites 1995 Summary Report. April 1995.

LIST OF APPENDICES

(Appendices A through K are provided in electronic format on the enclosed DVD)

APPENDIX L

AS-BUILT DRAWINGS



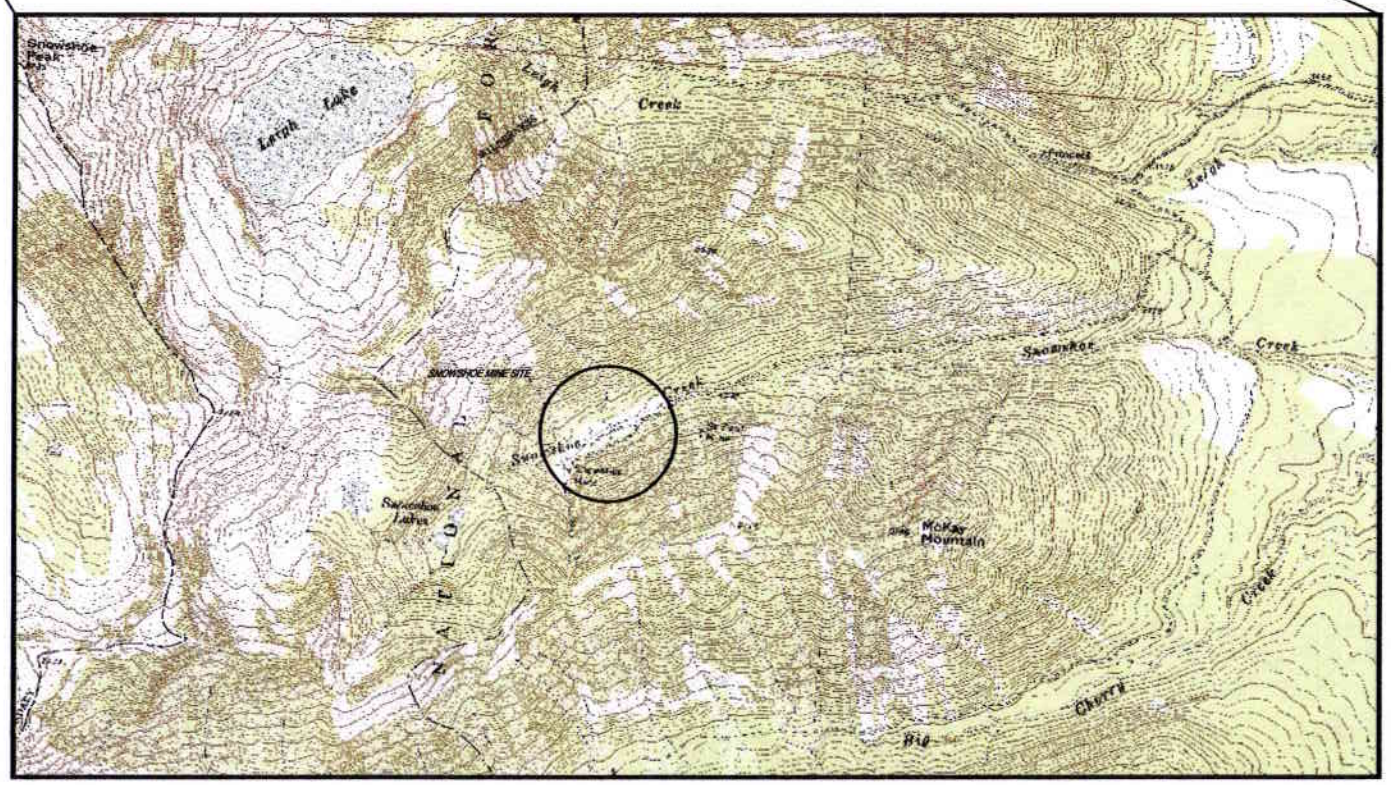
MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY
MINE WASTE CLEANUP BUREAU

SNOWSHOE MINE SITE RECLAMATION PROJECT LINCOLN COUNTY, MONTANA AS-BUILT CONSTRUCTION DRAWINGS

PREPARED BY

PIONEER TECHNICAL SERVICES, INC.

OCTOBER 2010



SITE VICINITY MAP

SOURCE: USGS 7.5 MINUTE QUADRANGLE

SHEET INDEX

SHEET 1

LEGEND

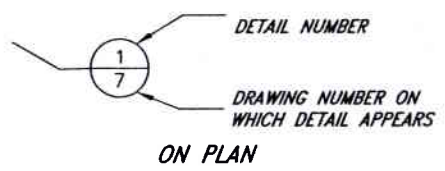
EXISTING – PLAN VIEW

- INDEX CONTOURS
- INTERMEDIATE CONTOURS
- FENCE
- EXISTING ROAD
- STREAM CHANNEL/SURFACE WATER

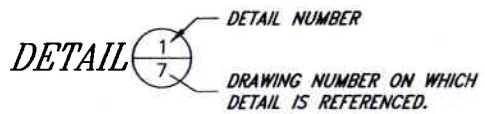
PROPOSED – PLAN VIEW

- INDEX CONTOURS
- INTERMEDIATE CONTOURS
- 100 FT. STATIONING (2+00)
- GRADE OR SURFACE SLOPE (PERCENT) (2%)
- CENTERLINE
- ℄ CENTERLINE
- SLOPE DESIGNATION (ARROWS POINT DOWN SLOPE)
- SLOPE DESIGNATION (1:3)

DETAIL INDICATOR

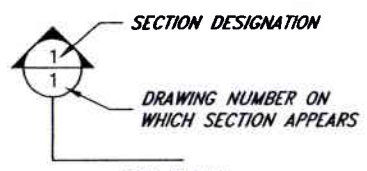


ON PLAN

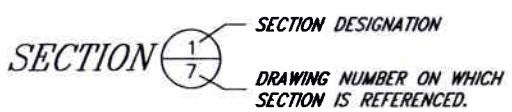


AT DETAIL

SECTION INDICATOR



ON PLAN



AT SECTION

NOTES:
ON PLANS: "--" SYMBOL IN UPPER HALF OF BUBBLE INDICATES GENERAL REFERENCE TO NOTED DRAWING NUMBER.
AT DETAIL/SECTIONS: "--" SYMBOL (NO DRAWING NUMBER) IN LOWER HALF OF BUBBLE INDICATES DETAIL/SECTION IS REFERENCED ON MORE THAN ONE DRAWING.

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JSM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: NA VERT: NA
SCALE IN FEET 0 NA NA

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RECLAMATION PROJECT

LEGEND

SHEET 2

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NO.	BY	DATE	REVISION DESCRIPTION

DRAWN	CLA
DESIGNED	JSM
CHECKED	JSM
APPROVED	JSM
DATE	10/15/10
PROJECT NO.	10139

SCALE IN FEET
0 2500 5000

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RECLAMATION PROJECT

SITE VICINITY MAP
(USGS QUAD)

SHEET 3

SOURCE:
SNOWSHOE PEAK, CABLE MOUNTAIN, HORSE MOUNTAIN
LIBBY, LITTLE HOOOOO MOUNTAIN,SCENERY MOUNTAIN
SWEDE MOUNTAIN, TREASURE MOUNTAIN, AND VERMICULITE
MOUNTAIN, USGS 7.5' QUADS

GRANITE LAKE
LEIGH LAKE
SNOWSHOE LAKE
SNOWSHOE MINE
SNOWSHOE ROAD FR #6213
TEMPORARY HAUL ROAD
REPOSITORY SITE
FR #867 CONTINUES
CHERRY CREEK ROAD FR #867
FR #278 CONTINUES
PRIMARY ACCESS ROUTE
BEAR CREEK ROAD FR #278
HIGHWAY 2
TO LIBBY
LIBBY
HIGHWAY 2
KOOTENAI NATIONAL FOREST

T-7 EXCAVATION AREA

CONSTRUCT SEDIMENT DETENTION POND, SEE SHEET 05

ENHANCE EXISTING ROAD, AS NECESSARY SEE SHEETS 5 AND 6

INSTALLED ROCK BARRICADE, SEE SHEET 30

TAILINGS BOUNDARY

EXCAVATED REMOVE AND RECLAIM TAILINGS AREA, SEE SHEETS 14 THROUGH 21-1

FORESTED AREA

EXISTING STREAM CHANNEL TO BE RECONSTRUCTED, SEE SHEET 28

REVEGETATED AREA ALONG ROAD

REVEGETATE EXCAVATED FOOTPRINT OF TALINGS AREA, SEE SHEET 33

PREVIOUSLY RECLAIMED AREA BOUNDARY (WASTE ROCK DUMP #4) PARTIAL REMOVAL SEE SHEET 22

CLOSE ADIT 2, SEE ADIT CLOSURE DETAILS SHEETS D9 AND D10

WASTE ROCK DUMP #1 NO ACTION

WASTE ROCK DUMP #2 NO ACTION

ADIT 1 SEE ADIT CLOSURE DETAIL SHEETS D9 AND D10

PARKING AREA, SEE SHEET 30

INSTALL ROCK BARRICADE SEE SHEET 30

CLOSED ADIT 3, UTILIZING PUFF

ADIT 4 NO ACTION

WASTE ROCK DUMP #3 NO ACTION

ADIT 5 NO ACTION

ENHANCED EXISTING STORM WATER CONTROL, SEE SHEET 31

EXPOSED MINE WASTE

AMENDED COVER SOIL BOUNDARY

ADIT 6, NO ACTION

FIND EXISTING DISCHARGE PIPE FROM ADIT 6, REPAIR PIPING AND DAYLIGHT.

SNOWSHOE CREEK

INSTALLED 12" COVER SOIL IN AREAS DESIGNATED BY ENGINEER OR OVERSIGHT PERSONNEL SEE SHEET 29

INSTALL 24" COVER SOIL ALONG NORTHERN TOE OF WR-4, REVEGETATE, AND INSTALL EROSION CONTROL MAT, SEE SPECIAL PROVISONS AND SHEET D12

LEGEND
USFS
PRIVATE

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JSM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT:
SCALE IN FEET
0 125 250

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MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

PROJECT OVERVIEW

SHEET 4

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NOTES:
1) INSTALL COMPOST FILTER SOX ALONG TOE OF FILL SLOPE ON SNOWSHOE CREEK ROAD (STA ~35+20 TO STA ~42+20) PRIOR TO BEGINNING ROAD IMPROVEMENT WORK IN THIS AREA. SEE DETAIL (25/D11).

2) IMPROVE SNOWSHOE CREEK ROAD (STA 0+00 TO STA ~130+50) AS SHOWN ON THE APPROPRIATE TYPICAL CROSS-SECTIONS, SHEET D1.

3) HYDROMULCH, FERTILIZE, AND SEED, STEEP SLOPES THAT ARE DISTURBED DURING SNOWSHOE CREEK ROAD MODIFICATIONS ACCORDING TO SPECIAL PROVISIONS.

ROAD SEGMENT #1 (SNOWSHOE CREEK ROAD) STA 0+00 TO STA ~130+50. COMPLETED ROAD IMPROVEMENT WORK IN ACCORDANCE WITH TYPICAL CROSS-SECTIONS SEE DETAILS (1,2,3/D1)

STA 54+60 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 59+91 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 63+76 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 66+30 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 101+17 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 80+00 TO 86+00 AND STA 92+50 TO 98+50 INSTALLED CONCRETE JERSEY BARRIERS SEE DETAILS (2/D1) AND (28/D13)

STA 56+35 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 52+34 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 48+21 INSTALL CULVERT SEE DETAILS (4,5/D2)

STA 45+34 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 34+00 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STA 70+79 INSTALLED CULVERT SEE DETAILS (4,5/D2)

STATIONS 43+95 INSTALLED FRENCH DRAIN ACROSS ROAD, SEE SHEET D14

INSTALLED COMPOST FILTER SOX (STA ~35+20 TO STA ~42+20) ALONG TOE OF FILL SLOPE ON SNOWSHOE CREEK ROAD. SEE DETAIL (25/D11)

INSTALLED PERMANENT STREAM CROSSING AT 35+00 (SEE SPECIAL PROVISIONS)

Prospect

Snowshoe Creek

St Paul Mine

Snowshoe Mine

TAILINGS

5936

5985

5000

4400

4000

3600

5400

SOURCE:
CABLE MOUNTAIN AND SNOWSHOE PEAK USGS 7.5' QUAD

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JJM DESIGNED | JSM CHECKED
ELL APPROVED | 5/11/07 DATE | 10139 PROJECT NO.

SCALE IN FEET
0 350 700

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MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

PLAN VIEW OF ROADS DESIGNATED FOR IMPROVEMENT
STA 0+00 TO 112+00

SHEET 5

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NOTES:
1) HYDROMULCH, FERTILIZE, AND SEED, STEEP SLOPES THAT ARE DISTURBED DURING SNOWSHOE CREEK ROAD MODIFICATIONS ACCORDING TO SPECIAL PROVISIONS.

ROAD SEGMENT #3 (REPOSITORY ROAD) STA ~168+00 TO STA 209+62 WAS COMPLETED PRIOR TO THIS CONTRACT. CONTRACTOR SHALL MAINTAIN THE THE ROAD AS REQUIRED AND COMPLETE ANY MODIFICATIONS REQUIRED FOR CONTRACTOR'S EQUIPMENT.

REPOSITORY SITE

TEMPORARY HAUL ROAD CONSTRUCTED AND REMOVED BY CONTRACTOR

ROAD SEGMENT #1 (SNOWSHOE CREEK ROAD) STA 0+00 TO STA ~130+50. COMPLETED ROAD IMPROVEMENT WORK IN ACCORDANCE WITH TYPICAL CROSS-SECTIONS SEE DETAILS (1,2,3) D1.

INTERSECTION OF ROAD SEGMENT #2 WITH ROAD SEGMENT #3 STATION ~160+00. CONTRACTOR MODIFIED INTERSECTION TO ACCOMMODATE EQUIPMENT USED FOR THE PROJECT.

INSTALLED AND REMOVED STEEL DECKING ON EXISTING LEIGH CREEK BRIDGE SEE SHEET 03

STA 130+50 TO STA 169+00 (CHERRY CREEK ROAD) INSTALLED 4" COMPACTED LAYER OF ROAD BASE ON DRIVING SURFACE

ROAD SEGMENT #2 (CHERRY CREEK ROAD) STA. ~130+50 TO STA ~169+00.

STA 101+17 INSTALLED CULVERT SEE DETAILS (4,5) D2

STA 118+96 INSTALLED CULVERT SEE DEATILS (4,5) D2

STA 117+37 INSTALLED CULVERT SEE DETAILS (4,5) D2

SOURCE:
CABLE MOUNTAIN, AND SNOWSHOE PEAK USGS 7.5' QUAD

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN	JJM DESIGNED	MCR CHECKED
JSM APPROVED	10/15/10 DATE	10139 PROJECT NO.

SCALE IN FEET
0 350 700

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P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

PLAN VIEW OF ROADS DESIGNATED FOR IMPROVEMENT
STA 112+00 TO 209+00

SHEET 6

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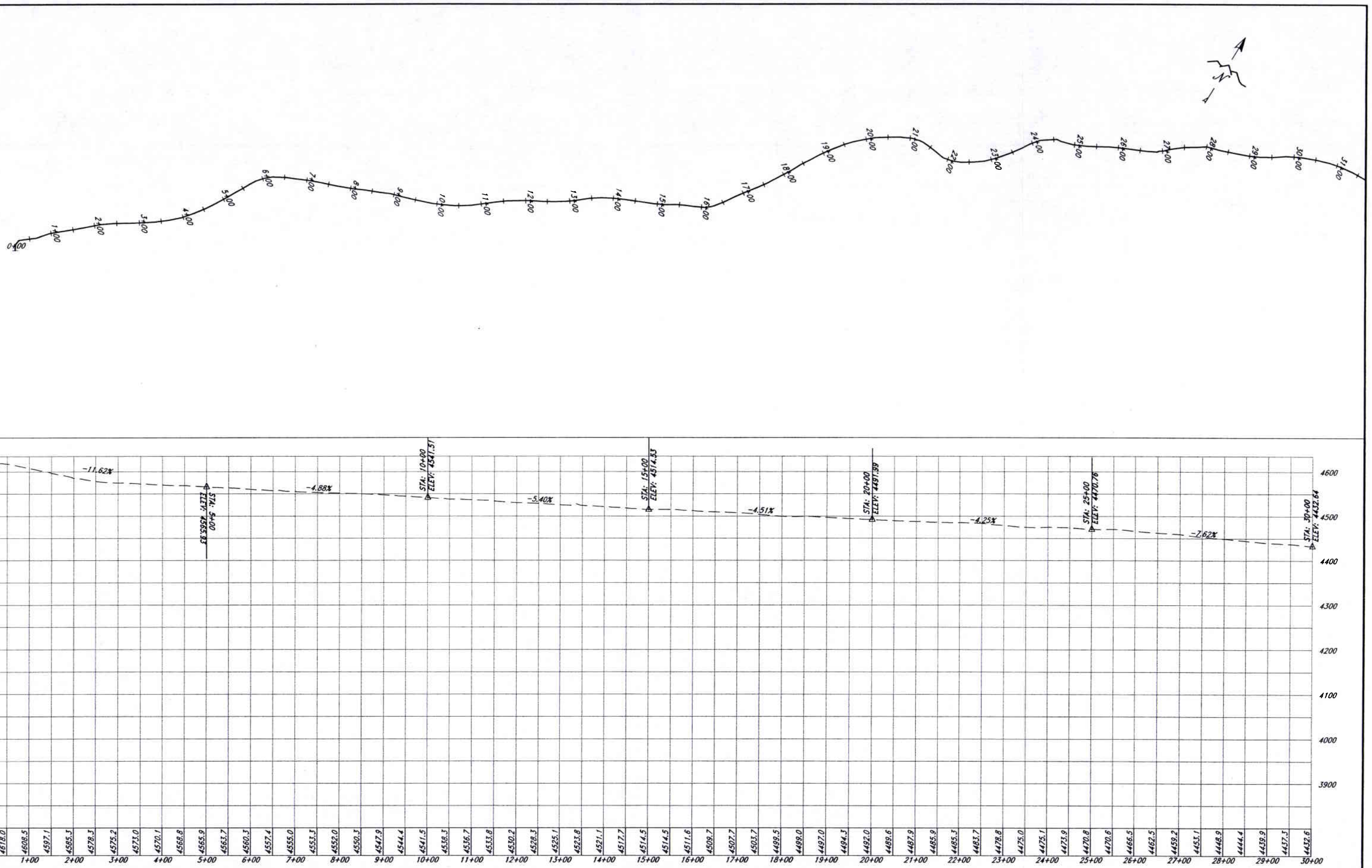

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN	JLM DESIGNED	MCB CHECKED
JSM APPROVED	10/15/10 DATE	10139 PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 100 200

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MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 0+00 TO 30+00

SHEET 7

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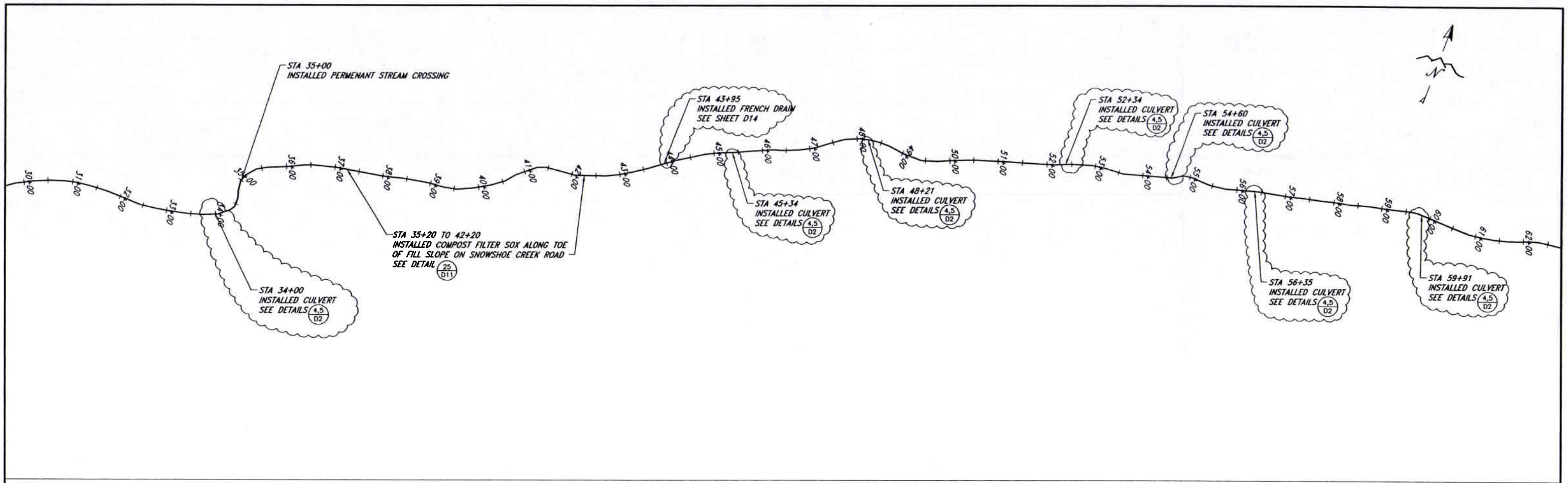

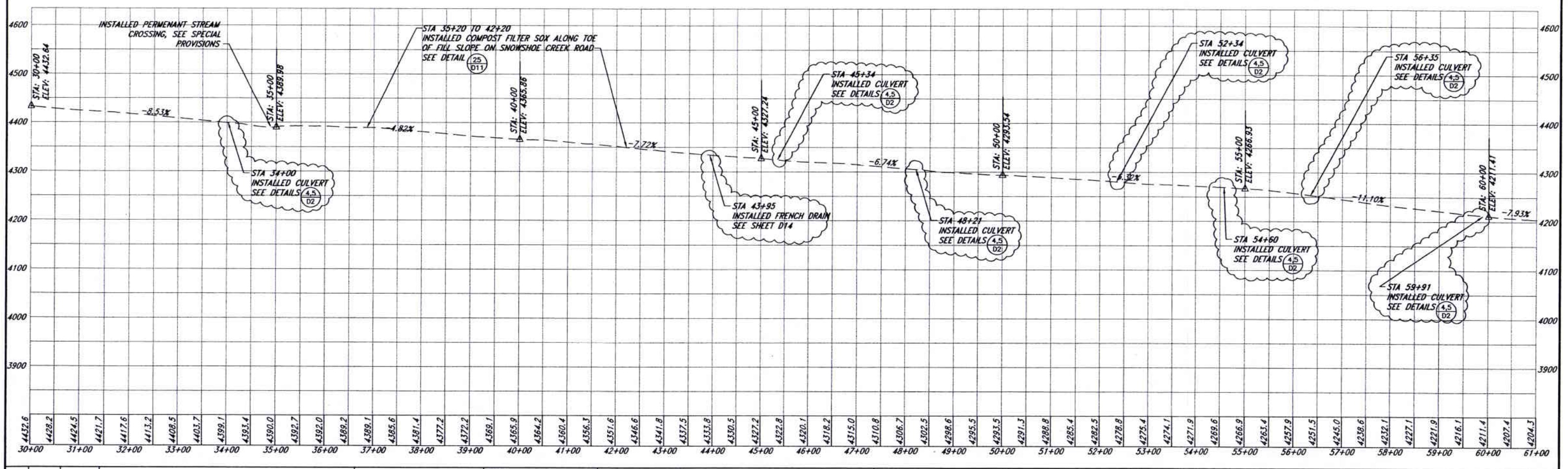

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CLA DRAWN	JJM DESIGNED	MCB CHECKED
JSM APPROVED	10/15/10 DATE	10139 PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 100 200

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SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 30+00 TO 61+00

SHEET 8

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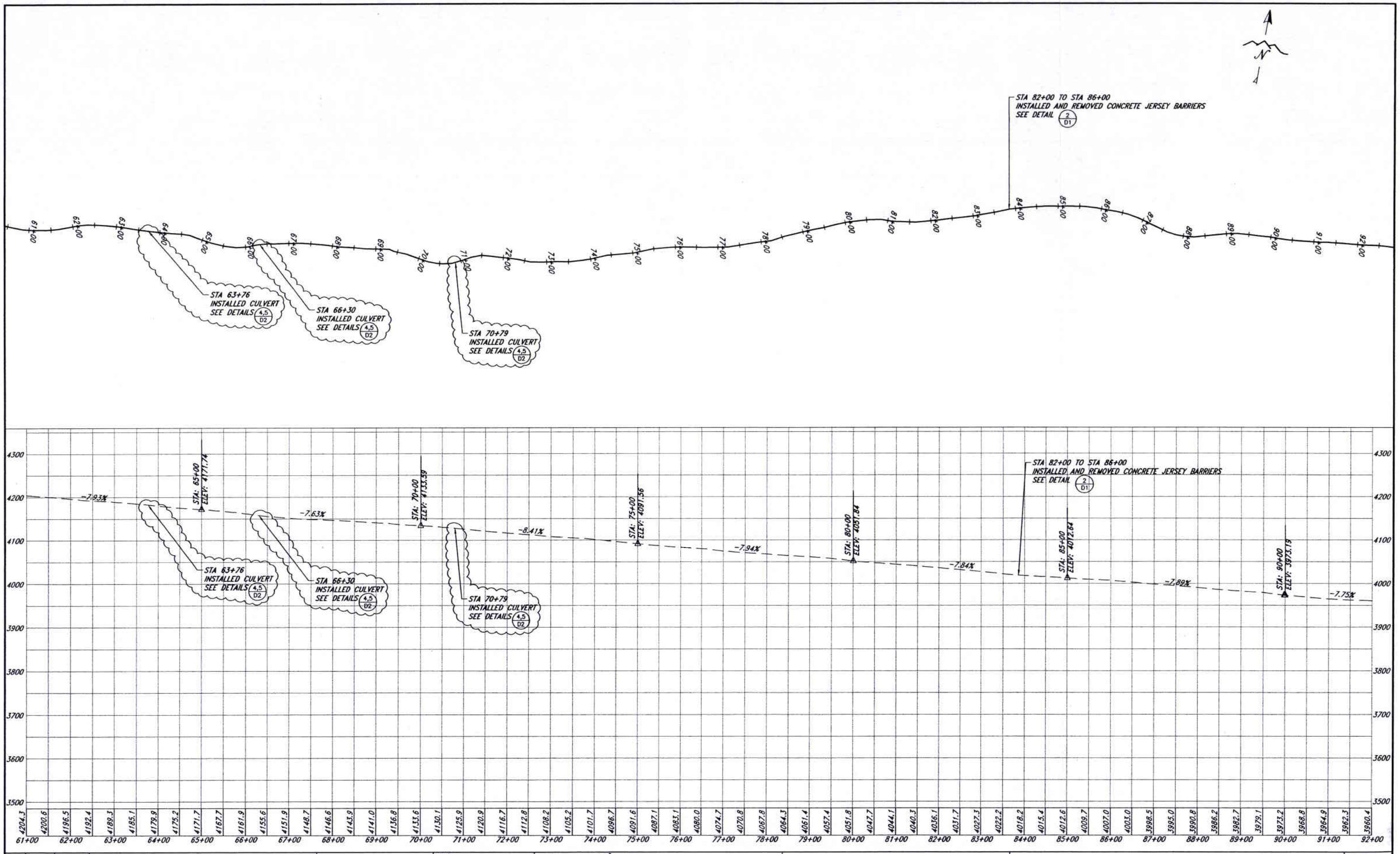

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DRAWN	DESIGNED	CHECKED
JSM	10/15/10	10139
APPROVED	DATE	PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 100 200

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BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 61+00 TO 92+00

SHEET
9

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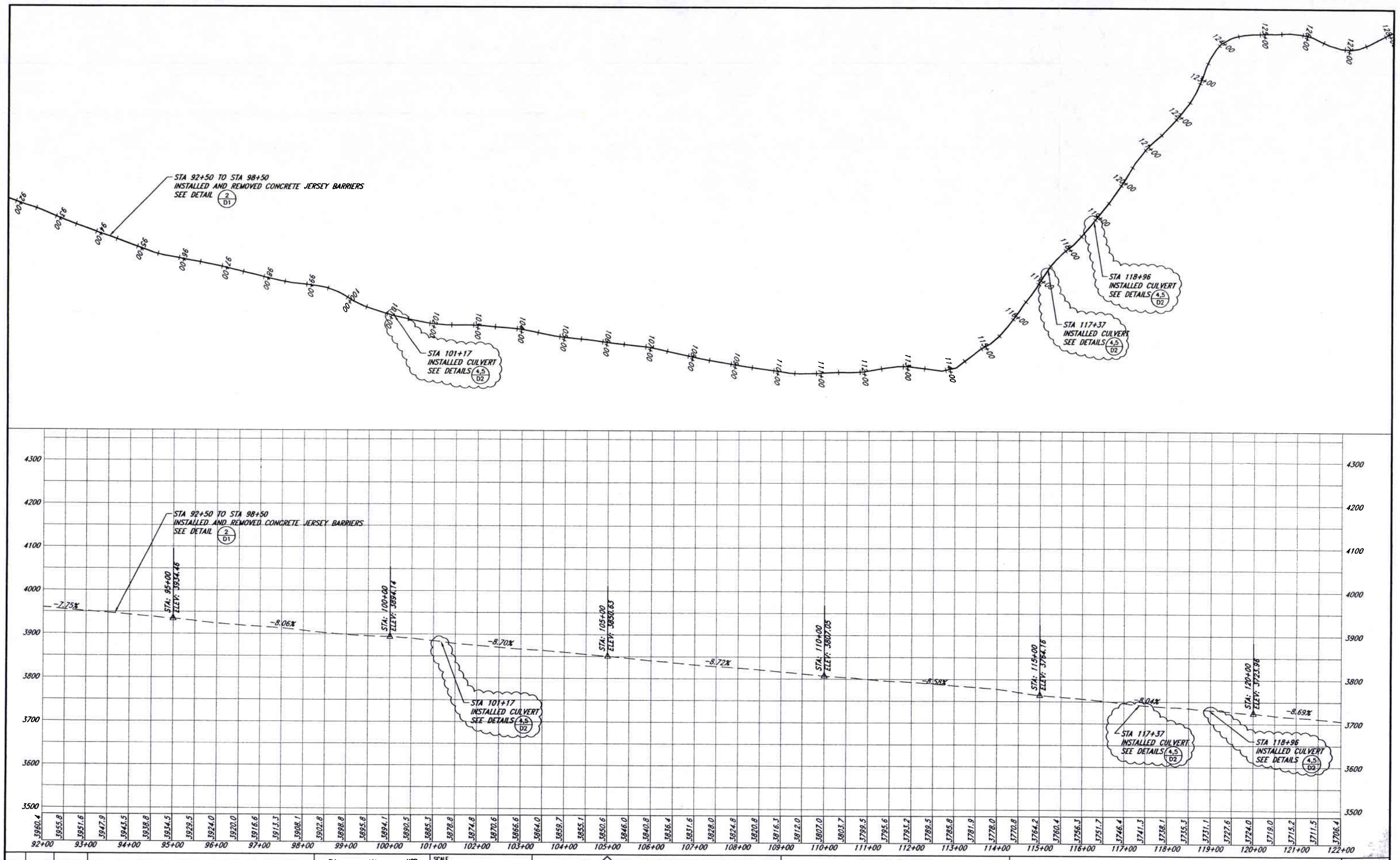

NO.	BY	DATE	REVISION DESCRIPTION

CLA	JJM	MCB
DRAWN	DESIGNED	CHECKED
JSM	10/15/10	10139
APPROVED	DATE	PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 100 200

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MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 92+00 TO 122+00

SHEET
10

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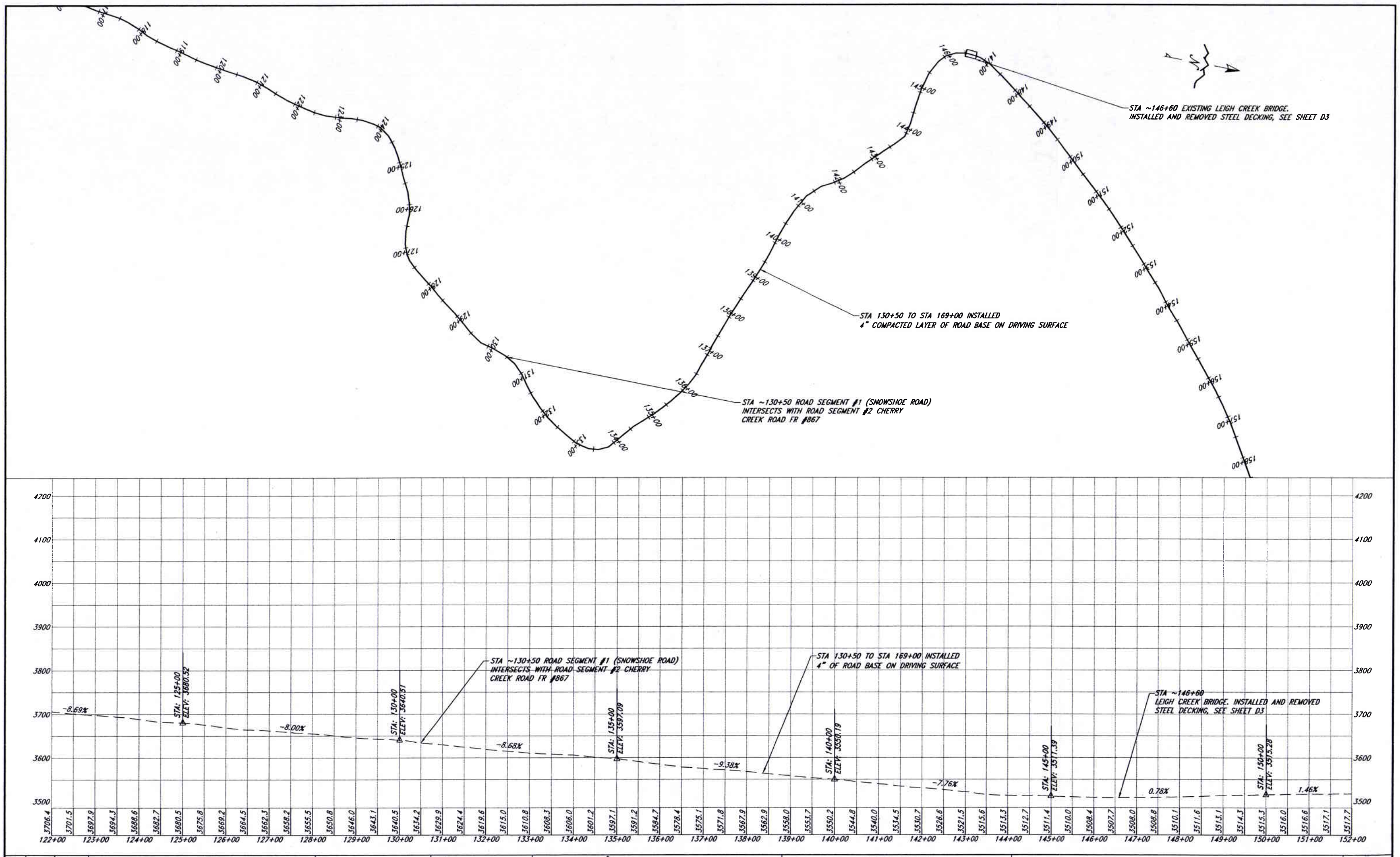

NO.	BY	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
JSM	10/15/10	10139
APPROVED	DATE	PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 100 200

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MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 122+00 TO 152+00

SHEET
11

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STA ~146+60 EXISTING LEIGH CREEK BRIDGE.
INSTALLED AND REMOVED STEEL DECKING, SEE SHEET D3

STA 130+50 TO STA 169+00 INSTALL
4" OF ROAD BASE ON DRIVING SURFACE

STA 161+00 TO 174+62 CONSTRUCTED TEMPORARY HAUL ROAD
TO ACCOMMODATE HAUL EQUIPMENT FOR PROJECT. AT END OF
PROJECT TEMPORARY HAUL ROAD WAS DISMANTLED, CAPPED
WITH COVER SOIL, REVEGITATED AND DEBRIS SPREAD OVER FOOT PRINT

ROAD SEGEMNT #3 (REPOSITORY ROAD) STA ~168+00
TO 209+62 WAS COMPLETED PRIOR TO THIS CONTRACT.
CONTRACTOR SHALL MAINTAIN THE ROAD AS REQUIRED TO
COMPLETE THE PROJECT.

STA~161+00 ROAD SEGMENT #2 (CHERRY CREEK ROAD)
INTERSECTS WITH ROAD SEGMENT #3 (REPOSITORY ROAD)

CHERRY CREEK ROAD
INSTALLED 4" OF ROAD
BASE MATERIAL

PERMANENT USFS ROAD TO REPOSITORY

INSTALLED ROCK BARRIERS AT USFS GATE

CONTRACTOR SHALL MODIFY INTERSECTION
TO ACCOMMODATE EQUIPMENT USED FOR PROJECT
NOT USED

STA 130+50 TO STA 161+00 INSTALLED
4" OF ROAD BASE ON DRIVING SURFACE

STA~161+00 ROAD SEGMENT #2 (CHERRY CREEK ROAD)
INTERSECTS WITH ROAD SEGMENT #3 (REPOSITORY ROAD)
MODIFY INTERSECTION TO ACCOMMODATE EQUIPMENT USED FOR THE PROJECT

STA: 155+00 ELEV: 3522.80
STA: 160+00 ELEV: 3517.43
STA: 165+00 ELEV: 3499.90
STA: 170+00 ELEV: 3502.14
STA: 175+00 ELEV: 3521.97
STA: 180+00 ELEV: 3536.30

1.46% -1.03% -3.51% 0.45% 3.97% 6.87% 6.04%

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JJM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.
SCALE HORIZ: VERT: SCALE IN FEET 0 100 200

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BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 152+00 TO 182+00

SHEET 12

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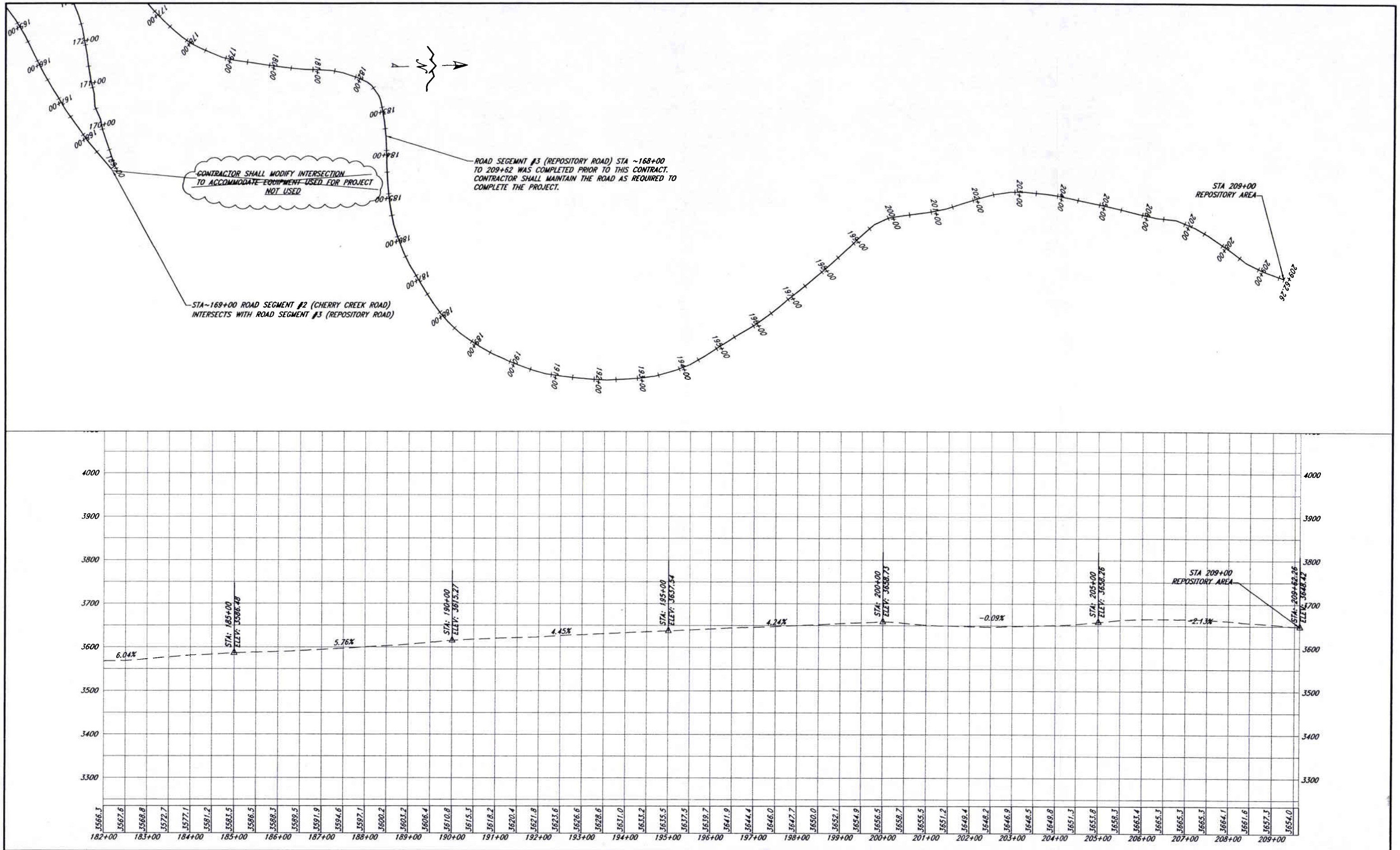

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JLM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 100 200

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P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

HAUL ROAD PLAN AND PROFILE
STA 182+00 TO 209+62

SHEET
13

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NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN
SDB APPROVED
10/15/10 DATE
JAM DESIGNED
10139 PROJECT NO.
JSM CHECKED
SCALE HORIZ: VERT:
0 100 200
SCALE IN FEET

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS DEWATERING
PLAN VIEW

SHEET 14

NOTES:

1. CONSTRUCT A DAM/BARRIER NEAR STATION 3+00 TO COLLECT AND DIVERT SNOWSHOE CREEK SURFACE WATER FLOWS INTO A PIPE OR LINED CHANNEL AS DESCRIBED IN THE SPECIAL PROVISIONS.
2. DEWATERING PRIOR TO FULL-SCALE TAILINGS EXCAVATION SHALL BE ACHIEVED BY CONSTRUCTING A SEDIMENT DETENTION POND AT THE LOCATION SHOWN ON SHEET 14, AND BY CONSTRUCTING ONE (OR MORE) TRENCHES AND DEWATERING SUMPS WITHIN THE TAILINGS EXCAVATION AREA BETWEEN STATIONS 13+50 AND 25+38.
3. A GROUNDWATER DEWATERING TRENCH SHALL BE EXCAVATED ACROSS THE ENTIRE WIDTH OF THE TAILINGS IMPOUNDMENT AT STATION 13+50 (APPROXIMATELY). THE FLOOR OF THIS TRENCH SHALL SLOPE AT 1% TOWARD A DEWATERING SUMP CONSTRUCTED NEAR THE SOUTH END OF THE TRENCH, IN ACCORDANCE WITH DETAIL (7/D4).
4. WATER COLLECTED (VIA GRAVITY) IN THE GROUNDWATER DEWATERING TRENCH CONSTRUCTED AT STATION 13+50 SHALL BE PUMPED AND DISCHARGED INTO THE SEDIMENT DETENTION POND.
5. TAILINGS/MINE WASTES LOCATED BETWEEN STATIONS 13+50 AND 25+38 MAY NEED TO BE EXCAVATED IN VERTICAL LAYERS TO ACHIEVE PROPER DEWATERING AND TO REACH THE SPECIFIED EXCAVATION DEPTHS. THIS MAY REQUIRE INSTALLATION OF ADDITIONAL DEWATERING TRENCH(S) AND SUMP(S) BETWEEN STATIONS 13+50 AND 25+38 OR MOVEMENT OF EXISTING DEWATERING SUMP(S) AS THE TARGETED EXCAVATION DEPTHS ARE ACHIEVED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE NEED AND LOCATION OF ADDITIONAL DEWATERING TRENCH(S) AND SUMP(S) BETWEEN STATIONS 13+50 AND 25+38 TO ACCOMMODATE EXCAVATION ACTIVITIES.
7. AFTER TAILINGS/MINE WASTES LOCATED BETWEEN STATIONS 13+10 AND 25+38 ARE COMPLETELY EXCAVATED, RESULTING IN A CONSTRUCTED POND, AN ADDITIONAL GROUNDWATER DEWATERING TRENCH SHALL BE EXCAVATED ALONG THE ALIGNMENT SHOWN ON THIS SHEET BETWEEN STATIONS 3+00 AND 13+10, IN ACCORDANCE WITH DETAIL (6/D4).
8. DURING CONSTRUCTION SCHEDULE 2, AT A MINIMUM, ALL TAILINGS/MINE WASTES LOCATED BETWEEN STATIONS 13+10 AND 25+38 SHALL BE EXCAVATED AND HAULED TO THE REPOSITORY FOR DISPOSAL. ADDITIONALLY, THE GROUNDWATER DEWATERING TRENCH CONSTRUCTED ALONG THE ALIGNMENT SHOWN ON THIS SHEET BETWEEN STATIONS 3+00 AND 13+10 SHALL BE COMPLETED DURING CONSTRUCTION SCHEDULE 3.
9. AT THE END OF CONSTRUCTION SCHEDULE 2, SNOWSHOE CREEK SURFACE WATER FLOWS SHALL BE DIRECTED INTO THE GROUNDWATER DEWATERING TRENCH CONSTRUCTED BETWEEN STATIONS 3+00 AND 13+10, AND INTO THE CONSTRUCTED POND LOCATED IMMEDIATELY DOWNSTREAM.
10. EXCAVATION OF TAILINGS/MINE WASTES LOCATED BETWEEN STATIONS 3+00 AND 13+10 SHALL BE COMPLETED DURING CONSTRUCTION SCHEDULE 2. WASTE EXCAVATION ACTIVITIES AND STREAM RECONSTRUCTION WITHIN THIS AREA WILL REQUIRE DIVERSION OF SNOWSHOE CREEK.
11. CONTRACTOR SHALL INSTALL SILT FENCE 20' EACH SIDE OF EXISTING STREAM CHANNEL AT THE END OF CONSTRUCTION SCHEDULE 2 AS A BMP.

BOUNDARY OF TAILINGS EXCAVATION

CONSTRUCTED TYPICAL DEWATERING SUMP, SEE DETAIL (7/D4)

INSTALLED AND REMOVED TEMPORARY STREAM DIVERSION SEE SPECIAL PROVISIONS

APPROXIMATE FINAL CONTOURS AFTER EXCAVATION IS COMPLETE

CONSTRUCTED TYPICAL DEWATERING TRENCH BETWEEN STA 3+00 AND 13+10 ALONG ALIGNMENT SHOWN. SEE DETAIL (6/D4)

CONSTRUCTED DEWATERING TRENCH SEE DETAIL (6/D4). TO A DEPTH OF 15'-18' BELOW GROUND SURFACE

SEE NOTE 3

EXCAVATION WAS CONDUCTED FROM STA 18+75 TO 3+00, SEE NOTE 5

INSTALLED SEDIMENT DETENTION POND, SEE DETAIL (10/D5).

INSTALLED SILT FENCE, SEE NOTE 11 AND DETAIL (26/D11).

CONSTRUCTED POND RESULTING FROM WASTE EXCAVATION

INSTALLED DEWATERING SUMPS (7,8/D4) AS NECESSARY TO EXCAVATE TAILINGS/MINE WASTES, DISCHARGE THESE WATERS TO THE SEDIMENT DETENTION POND. SEE DETAIL (10/D5) SEE NOTE 5.

N

NOTES:

1. PRIOR TO TAILINGS EXCAVATION, THE CONTRACTOR DIVERTED SNOWSHOE CREEK AND DEWATER THE TAILINGS AREA AS DESCRIBED ON SHEET 14 AND THE SPECIAL PROVISIONS.

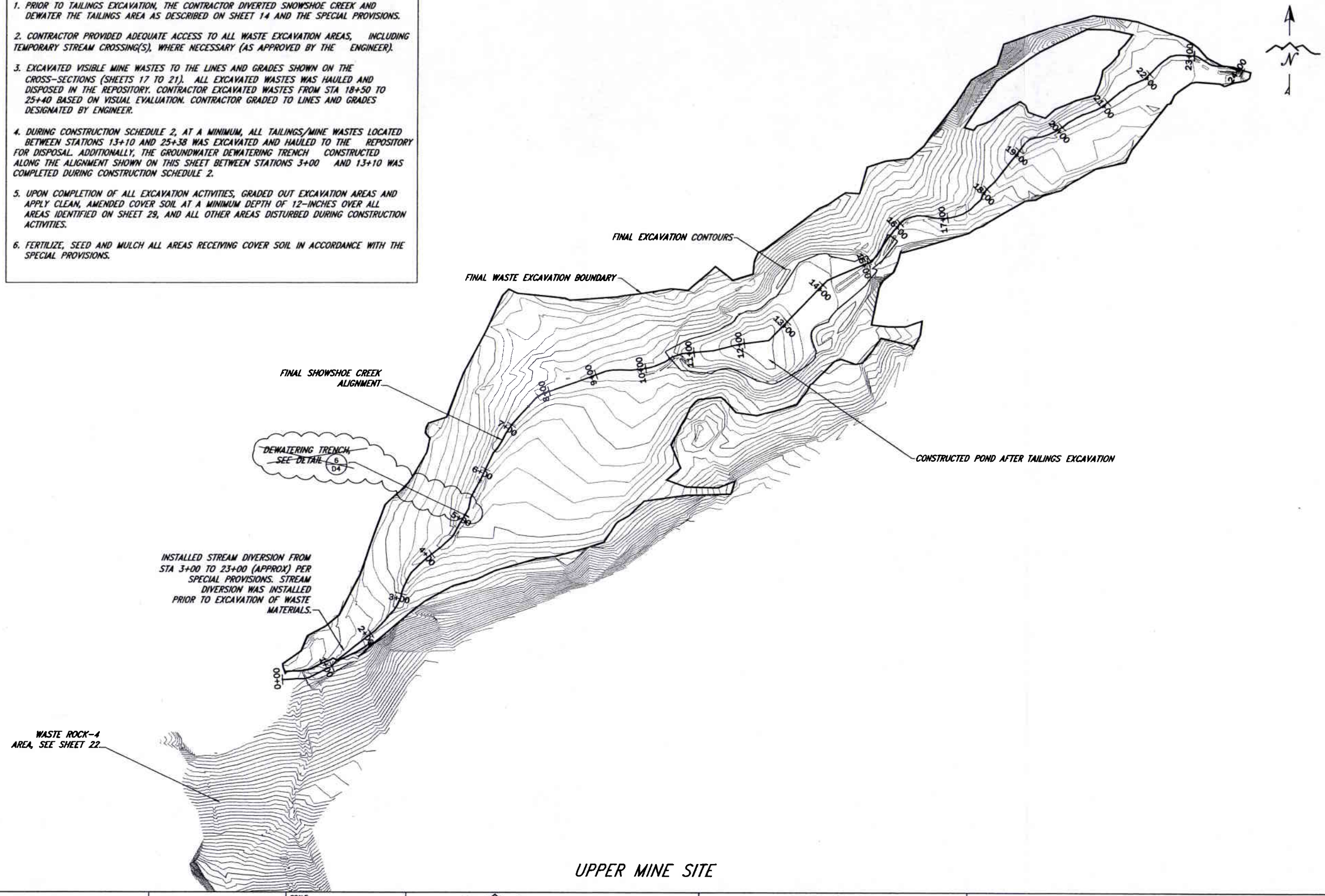
2. CONTRACTOR PROVIDED ADEQUATE ACCESS TO ALL WASTE EXCAVATION AREAS, INCLUDING TEMPORARY STREAM CROSSING(S), WHERE NECESSARY (AS APPROVED BY THE ENGINEER).

3. EXCAVATED VISIBLE MINE WASTES TO THE LINES AND GRADES SHOWN ON THE CROSS-SECTIONS (SHEETS 17 TO 21). ALL EXCAVATED WASTES WAS HAULED AND DISPOSED IN THE REPOSITORY. CONTRACTOR EXCAVATED WASTES FROM STA 18+50 TO 25+40 BASED ON VISUAL EVALUATION. CONTRACTOR GRADED TO LINES AND GRADES DESIGNATED BY ENGINEER.

4. DURING CONSTRUCTION SCHEDULE 2, AT A MINIMUM, ALL TAILINGS/MINE WASTES LOCATED BETWEEN STATIONS 13+10 AND 25+38 WAS EXCAVATED AND HAULED TO THE REPOSITORY FOR DISPOSAL. ADDITIONALLY, THE GROUNDWATER DEWATERING TRENCH CONSTRUCTED ALONG THE ALIGNMENT SHOWN ON THIS SHEET BETWEEN STATIONS 3+00 AND 13+10 WAS COMPLETED DURING CONSTRUCTION SCHEDULE 2.

5. UPON COMPLETION OF ALL EXCAVATION ACTIVITIES, GRADED OUT EXCAVATION AREAS AND APPLY CLEAN, AMENDED COVER SOIL AT A MINIMUM DEPTH OF 12-INCHES OVER ALL AREAS IDENTIFIED ON SHEET 29, AND ALL OTHER AREAS DISTURBED DURING CONSTRUCTION ACTIVITIES.

6. FERTILIZE, SEED AND MULCH ALL AREAS RECEIVING COVER SOIL IN ACCORDANCE WITH THE SPECIAL PROVISIONS.



UPPER MINE SITE

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 100 200

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION
PLAN VIEW

SHEET 15

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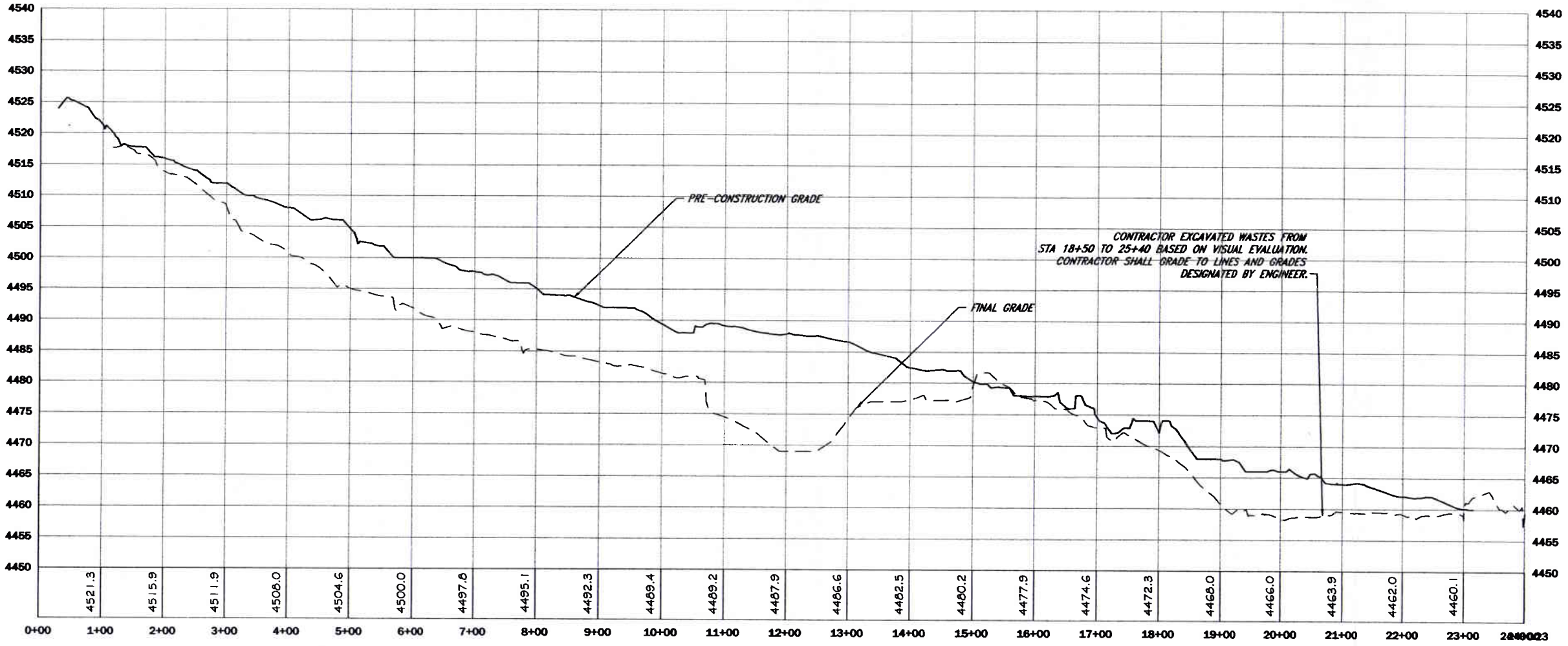

UPPER MINE SITE

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB DESIGNED | SDB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORZ: VERT: 1"=20'
SCALE IN FEET 0 100 200

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TAILINGS EXCAVATION PROFILE

SHEET 16

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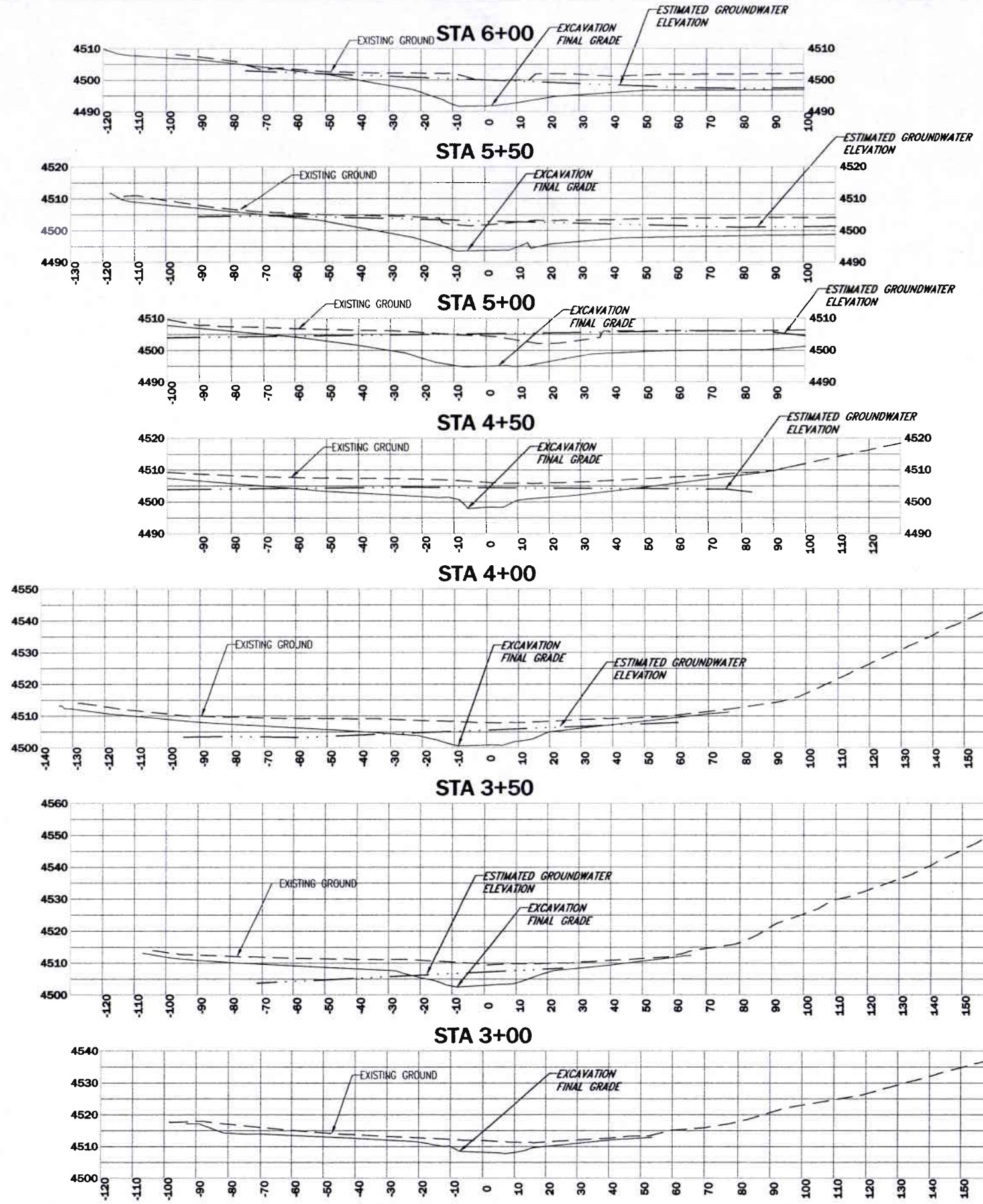

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB DESIGNED | SDB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.
SCALE HORIZ: VERT: SCALE IN FEET 0 20

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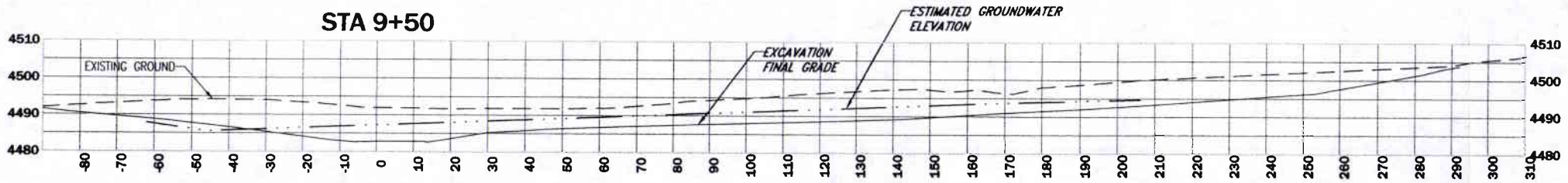
SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION CROSS SECTIONS
STA 3+00 TO 6+00

SHEET 17

10/19/2010 3:28:44 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C110-ASBUILT-10.DWG

STA 9+50



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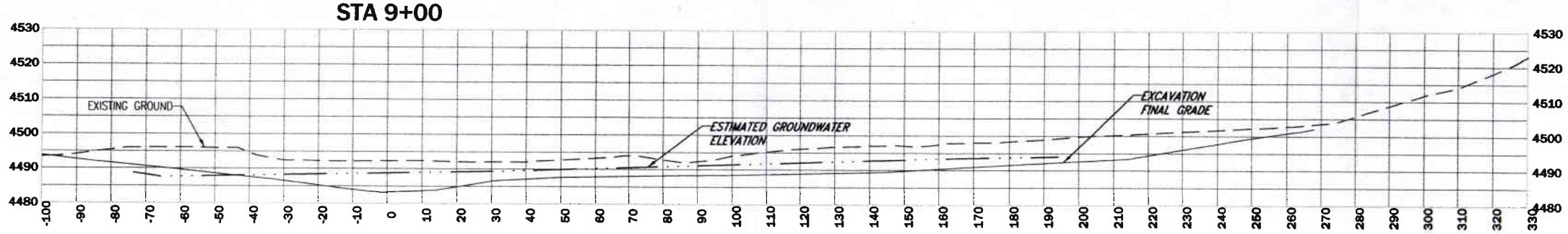

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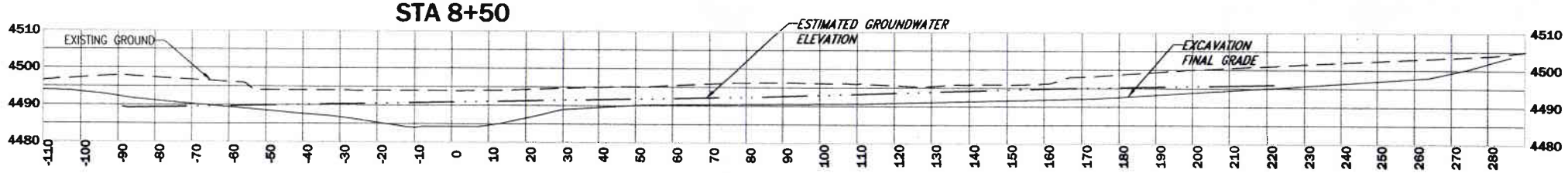

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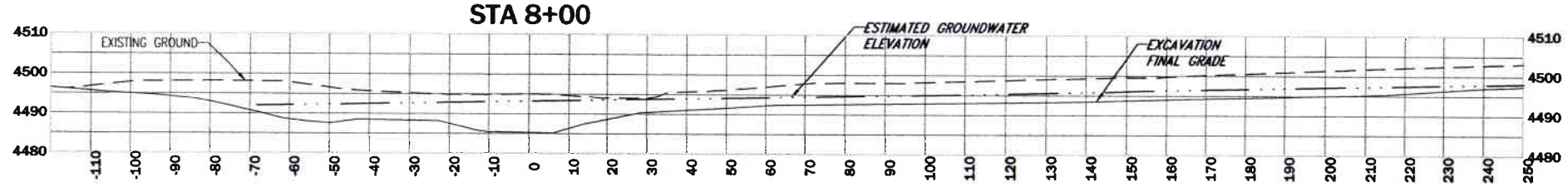

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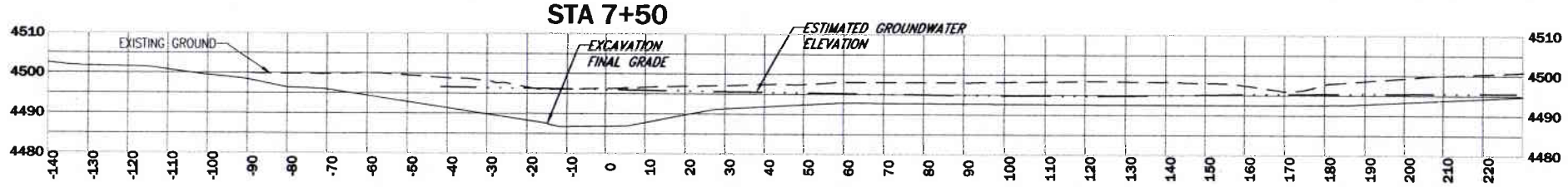

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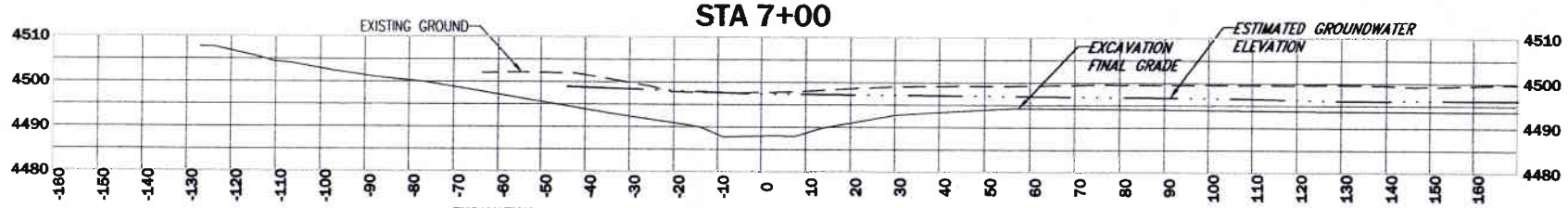

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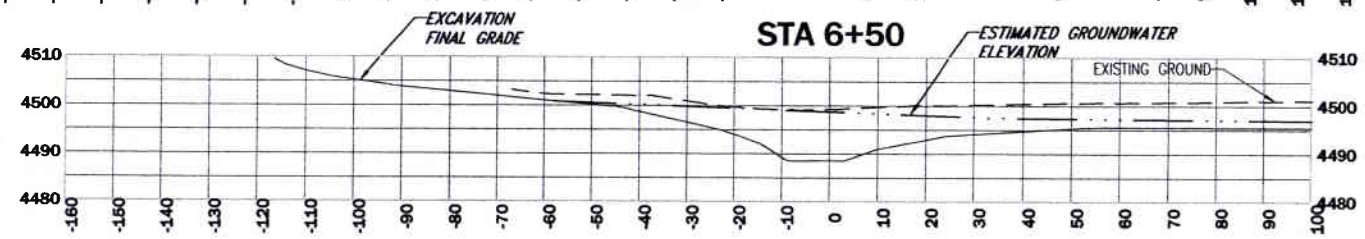

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB DESIGNED | SDB CHECKED
JSN APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 20 40

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SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION CROSS SECTIONS
STA 6+50 TO 9+50

SHEET 18

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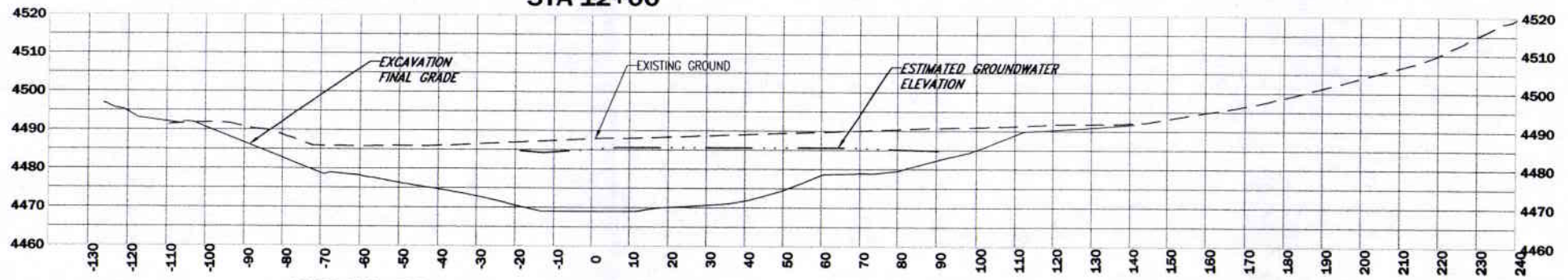

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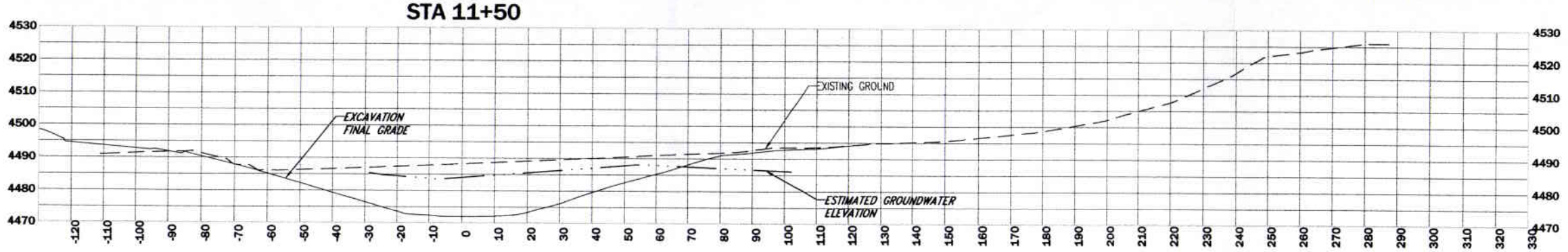

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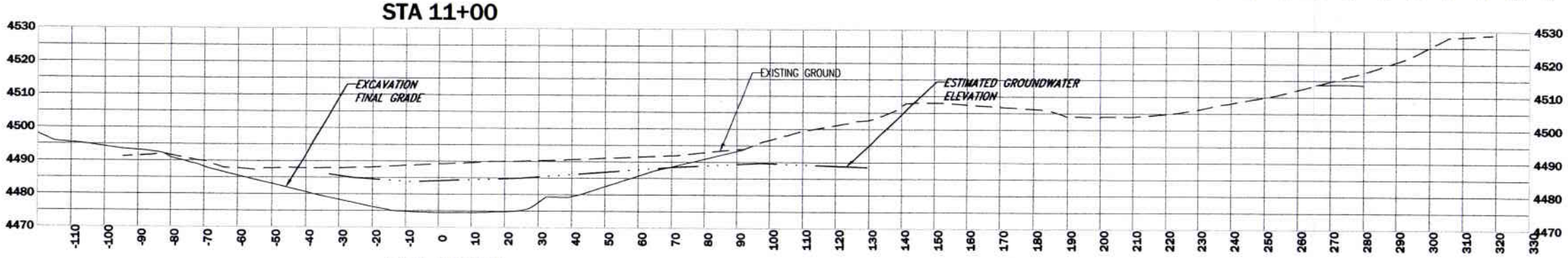

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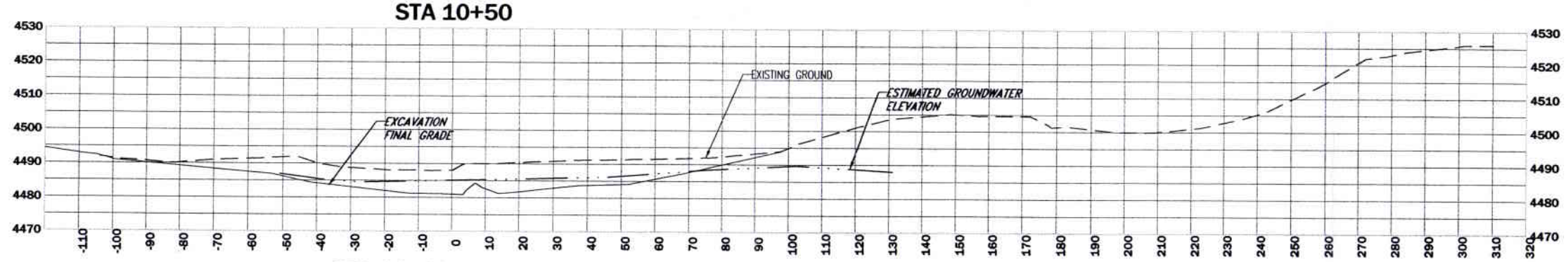

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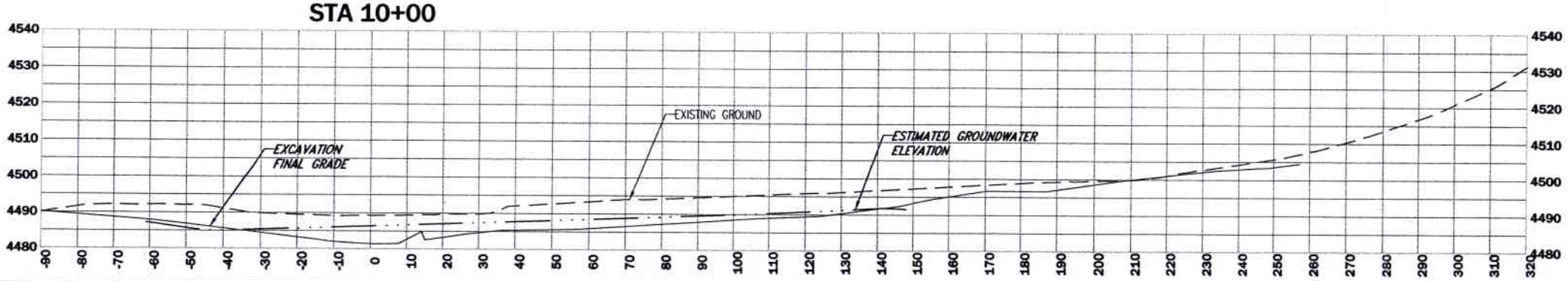

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN	MCB DESIGNED	SDB CHECKED
JSM APPROVED	10/15/10 DATE	10139 PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 20 40

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BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION CROSS SECTIONS
STA 10+00 TO 12+00

SHEET
19

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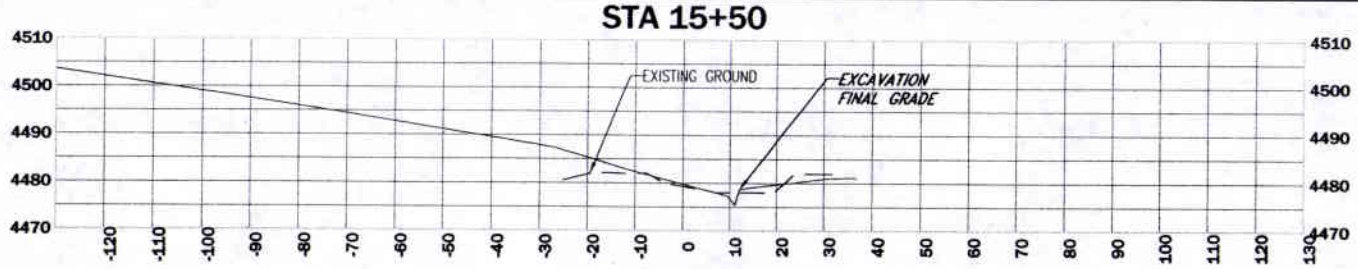

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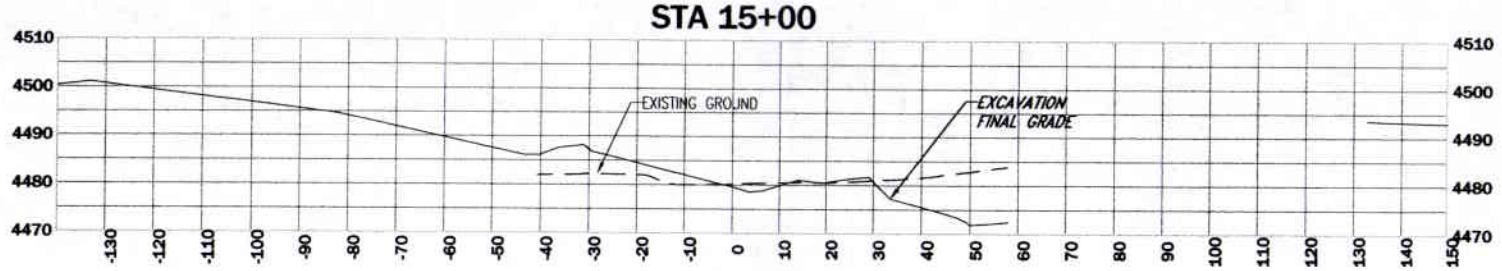

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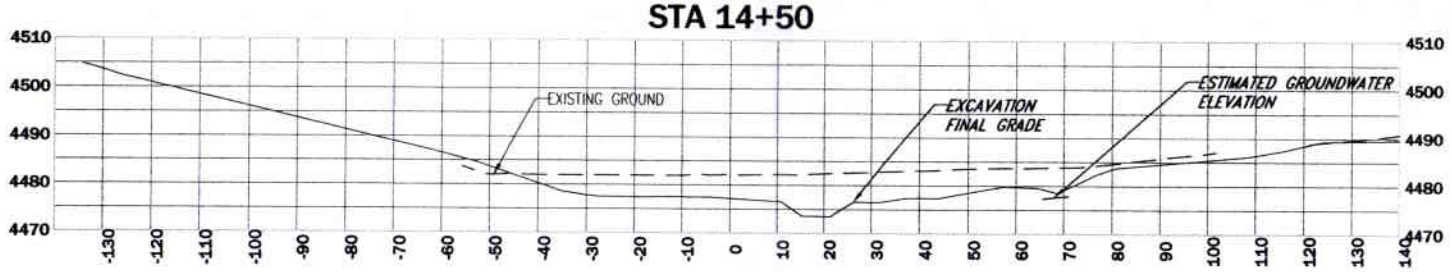

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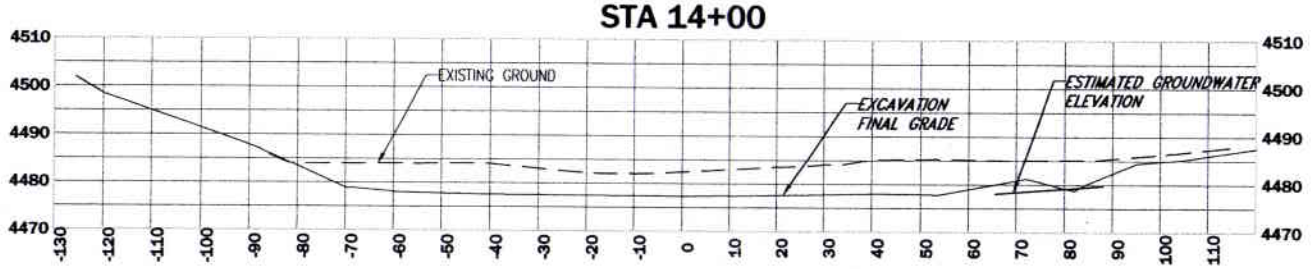

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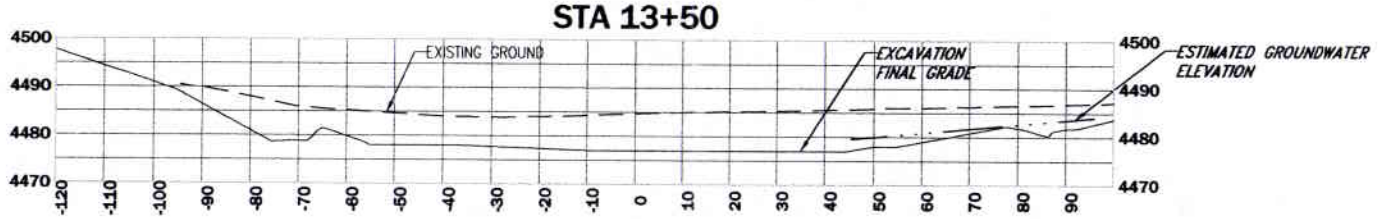

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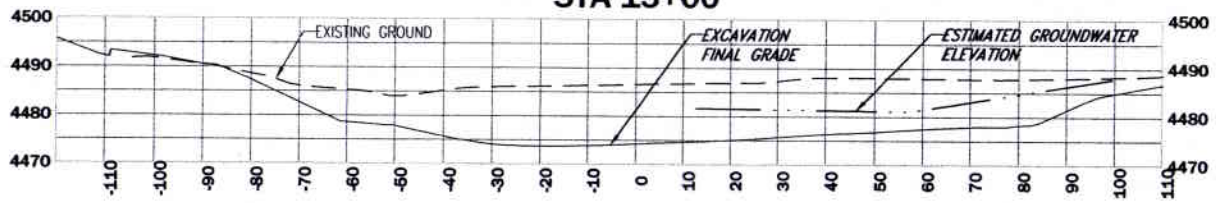

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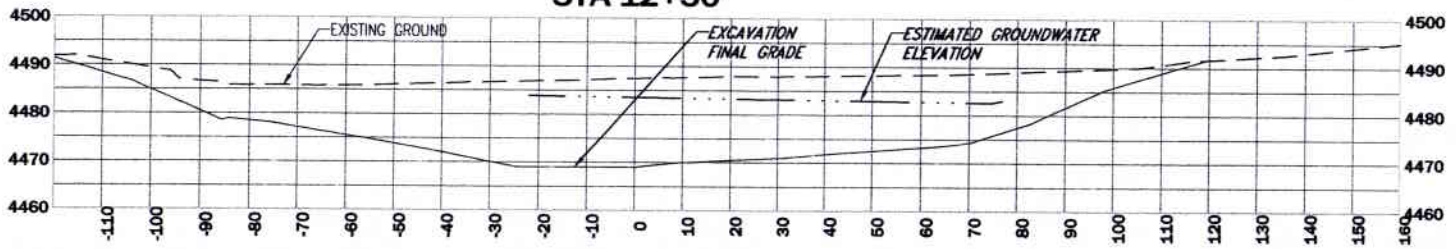

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SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION CROSS SECTIONS
STA 12+50 TO 15+50

SHEET 20

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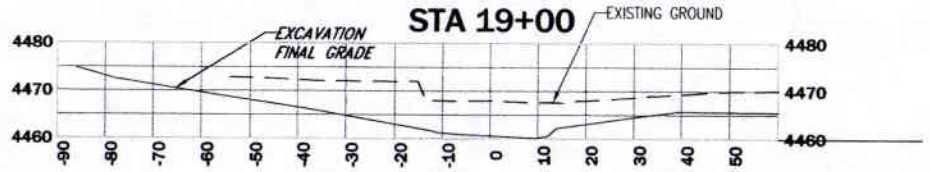
STA 19+00



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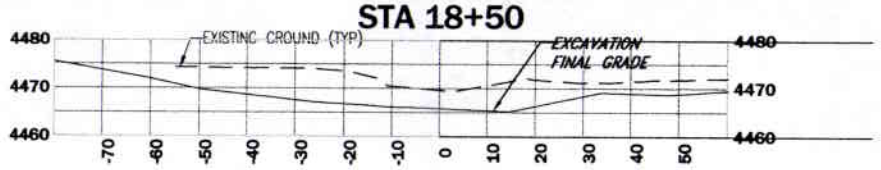

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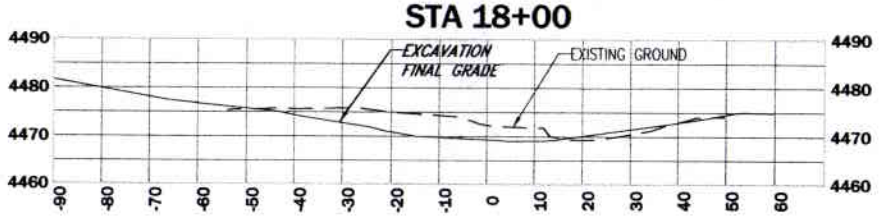

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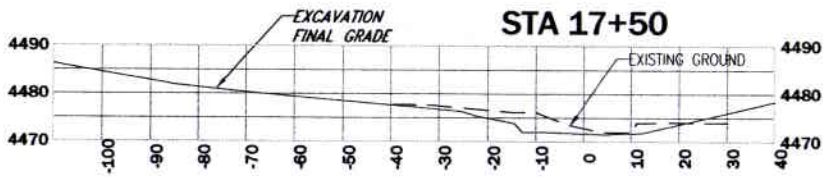

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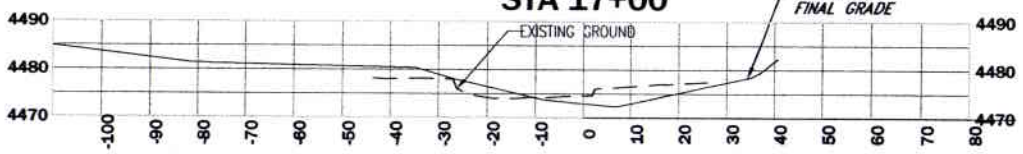

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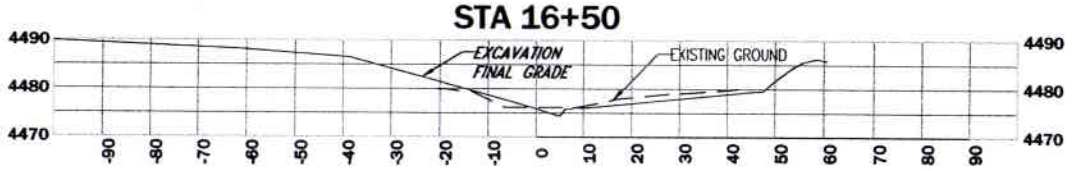

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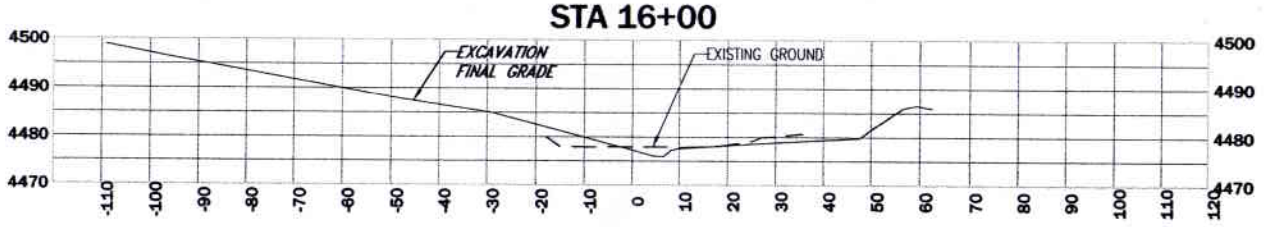

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SCALE HORIZ: VERT: SCALE IN FEET 0 20 40

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SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION CROSS SECTIONS
STA 16+00 TO 19+00

SHEET 21

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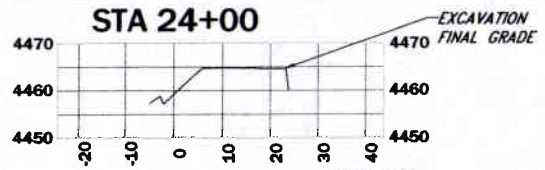

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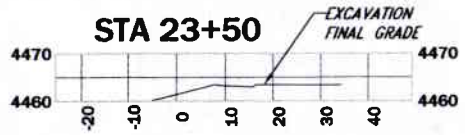

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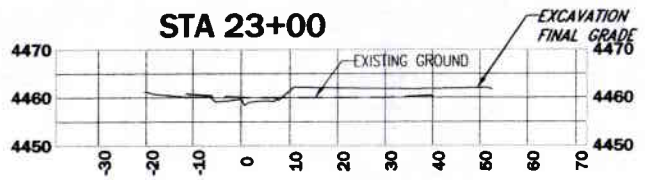

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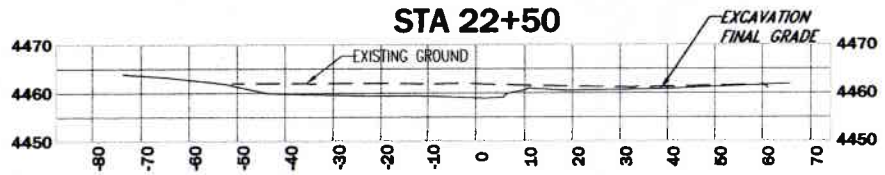

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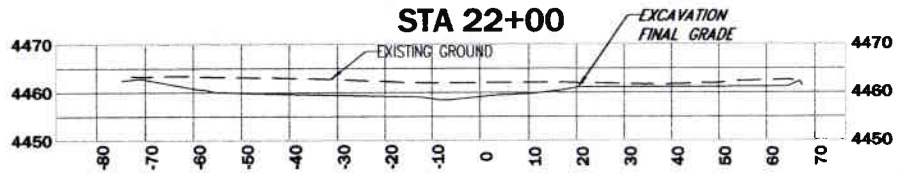

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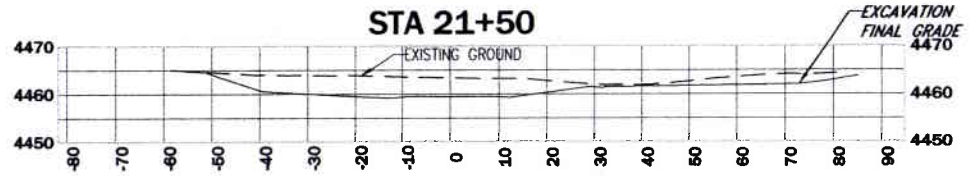

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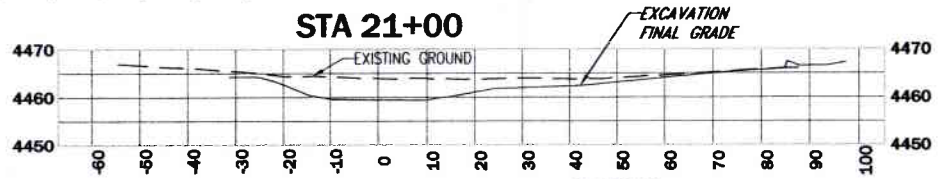

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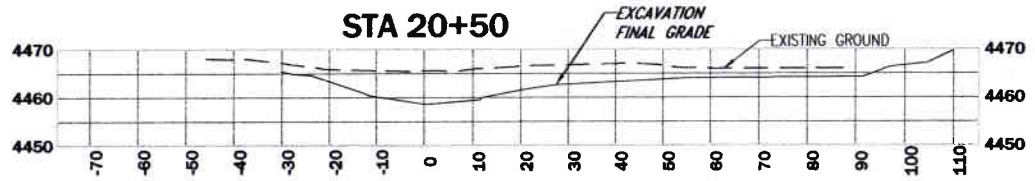
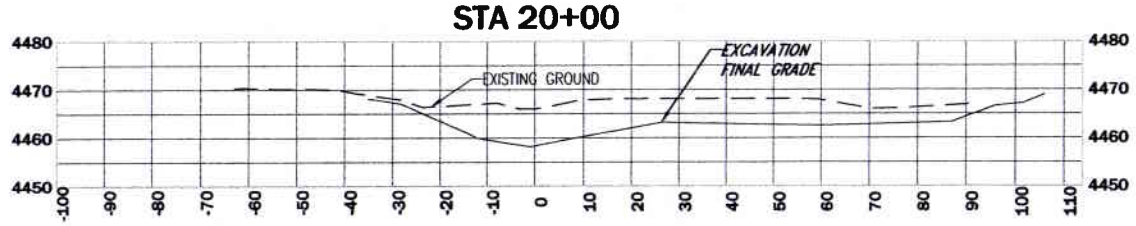
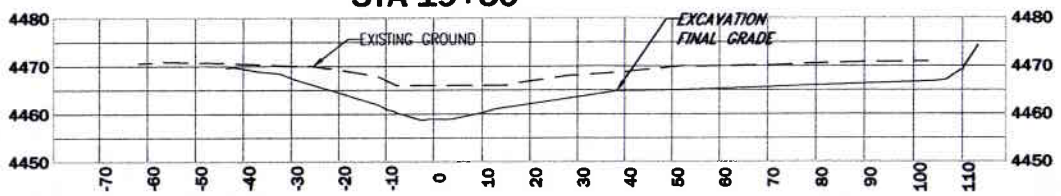


STA 20+00



STA 19+50



NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB DESIGNED | SDB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 20 40

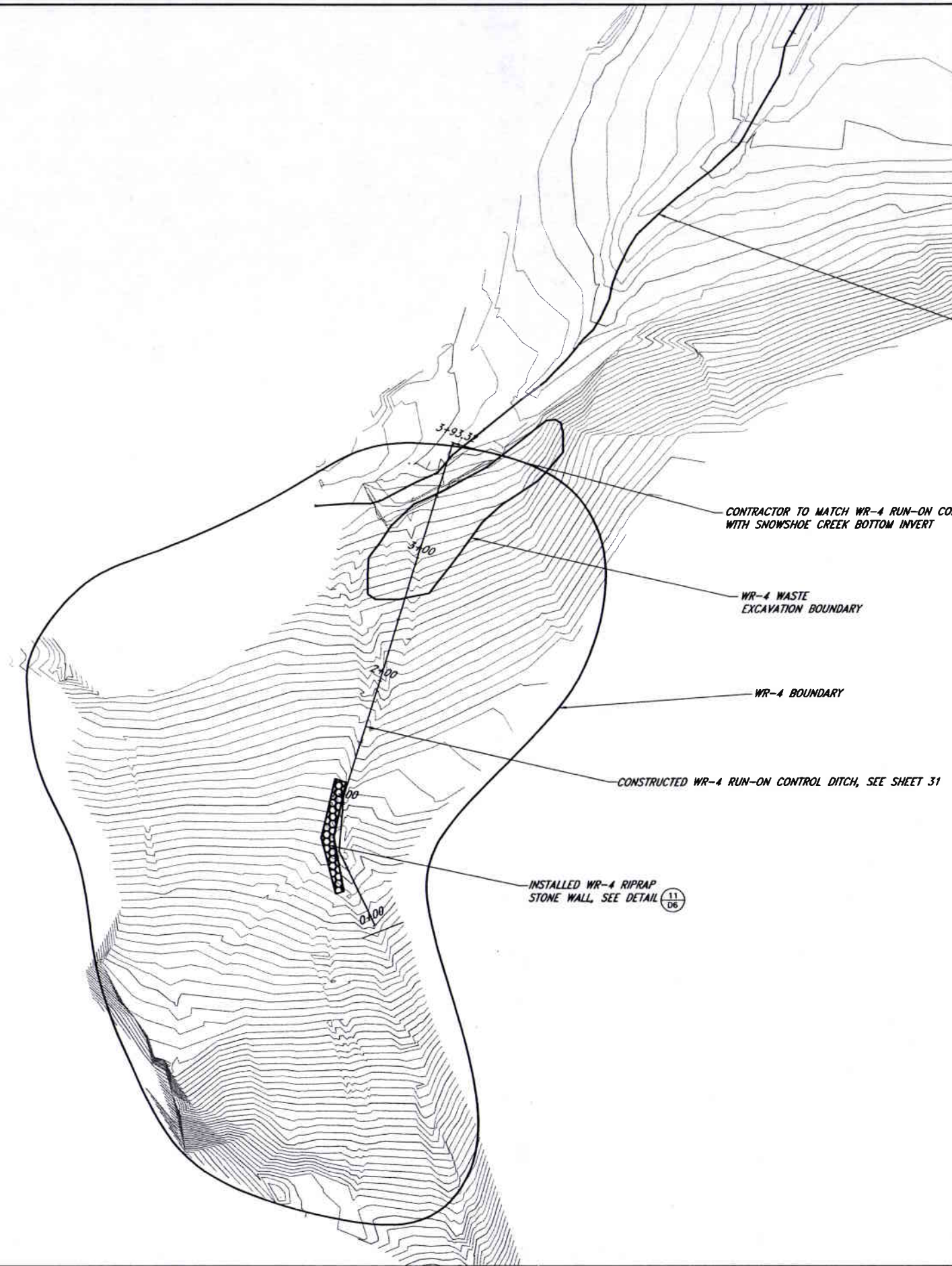
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

TAILINGS EXCAVATION CROSS SECTIONS
STA 19+50 TO 24+00

SHEET 21-1

10/19/2010 3:30:52 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-C110-ASBUILT-10.DWG



NO.	BY	DATE	REVISION DESCRIPTION

CLA — DRAWN | MCB — DESIGNED | MCB — CHECKED
JSM — APPROVED | 10/15/10 — DATE | 10139 — PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 50 100

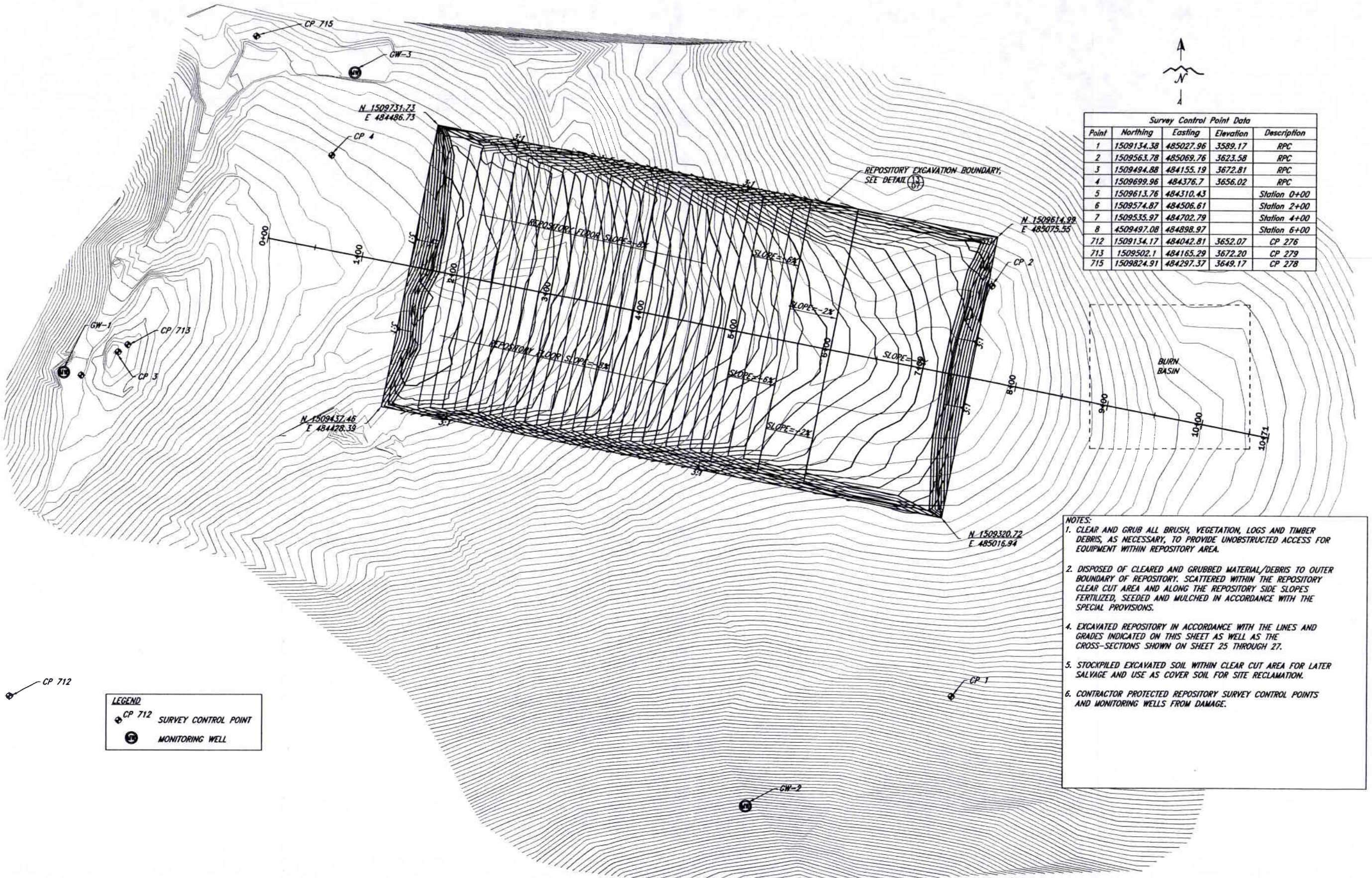
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

WR-4 PARTIAL EXCAVATION PLAN

SHEET 22

10/19/2010 3:31:38 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-C108-ASBUILT-10.DWG



Survey Control Point Data				
Point	Northing	Easting	Elevation	Description
1	1509134.38	485027.96	3589.17	RPC
2	1509563.78	485069.76	3623.58	RPC
3	1509494.88	484155.19	3672.81	RPC
4	1509699.96	484376.7	3656.02	RPC
5	1509613.76	484310.43		Station 0+00
6	1509574.87	484506.61		Station 2+00
7	1509535.97	484702.79		Station 4+00
8	4509497.08	484898.97		Station 6+00
712	1509134.17	484042.81	3652.07	CP 276
713	1509502.1	484165.29	3672.20	CP 279
715	1509824.91	484297.37	3649.17	CP 278

LEGEND

CP 712 SURVEY CONTROL POINT

MONITORING WELL

NOTES:

1. CLEAR AND GRUB ALL BRUSH, VEGETATION, LOGS AND TIMBER DEBRIS, AS NECESSARY, TO PROVIDE UNOBSTRUCTED ACCESS FOR EQUIPMENT WITHIN REPOSITORY AREA.
2. DISPOSED OF CLEARED AND GRUBBED MATERIAL/DEBRIS TO OUTER BOUNDARY OF REPOSITORY. SCATTERED WITHIN THE REPOSITORY CLEAR CUT AREA AND ALONG THE REPOSITORY SIDE SLOPES FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
4. EXCAVATED REPOSITORY IN ACCORDANCE WITH THE LINES AND GRADES INDICATED ON THIS SHEET AS WELL AS THE CROSS-SECTIONS SHOWN ON SHEET 25 THROUGH 27.
5. STOCKPILED EXCAVATED SOIL WITHIN CLEAR CUT AREA FOR LATER SALVAGE AND USE AS COVER SOIL FOR SITE RECLAMATION.
6. CONTRACTOR PROTECTED REPOSITORY SURVEY CONTROL POINTS AND MONITORING WELLS FROM DAMAGE.

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | SDB DESIGNED | MCB CHECKED

JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 50 100

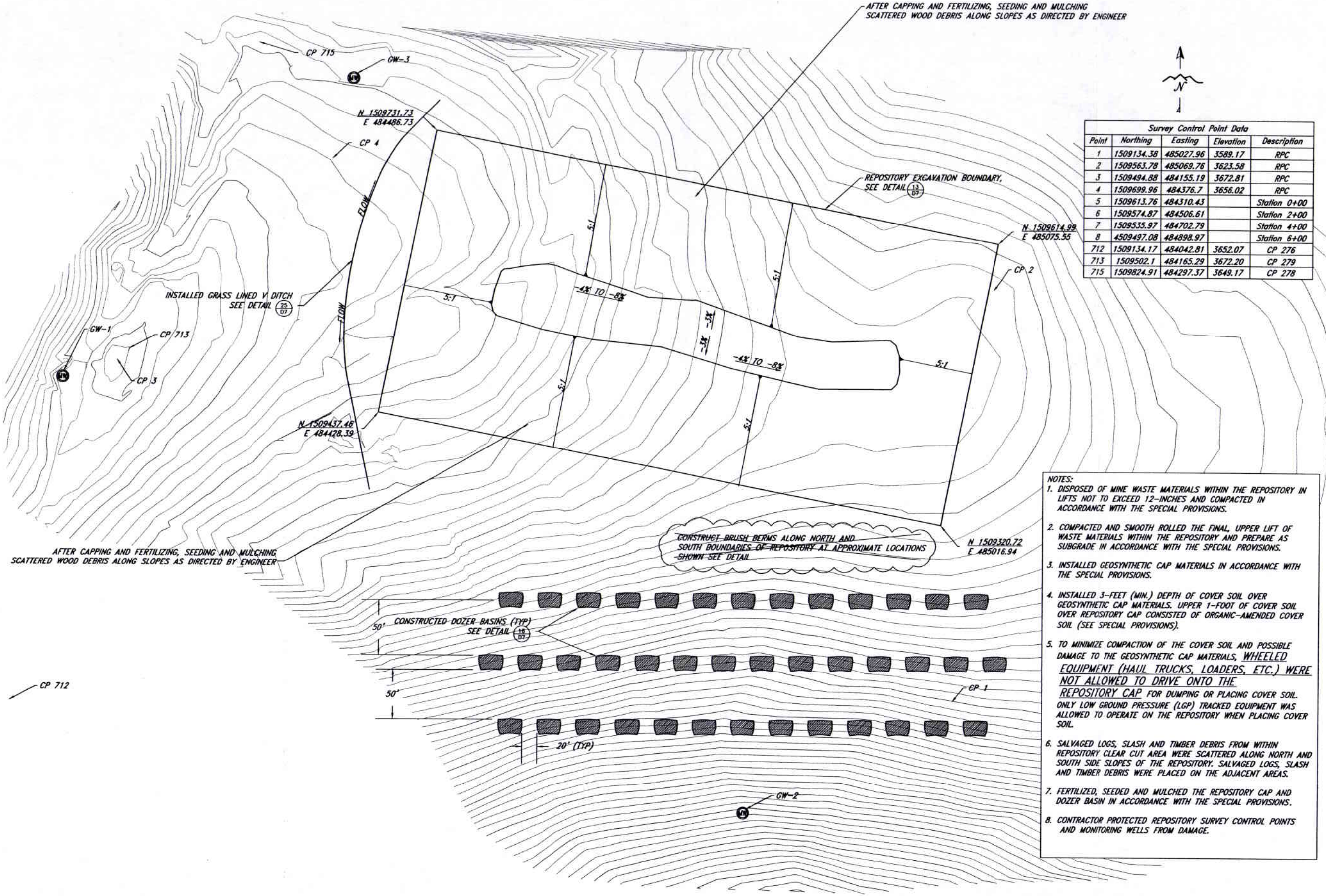
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

REPOSITORY EXCAVATION PLAN

SHEET 23

12/1/2010 4:56:17 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C105-ASBUILT-10.DWG



Survey Control Point Data				
Point	Northing	Easting	Elevation	Description
1	1509134.38	485027.96	3589.17	RPC
2	1509563.78	485069.76	3623.58	RPC
3	1509494.88	484155.19	3672.81	RPC
4	1509699.96	484376.7	3656.02	RPC
5	1509613.76	484310.43		Station 0+00
6	1509574.87	484506.61		Station 2+00
7	1509535.97	484702.79		Station 4+00
8	4509497.08	484898.97		Station 6+00
712	1509134.17	484042.81	3652.07	CP 276
713	1509502.1	484165.29	3672.20	CP 279
715	1509824.91	484297.37	3649.17	CP 278

NOTES:

1. DISPOSED OF MINE WASTE MATERIALS WITHIN THE REPOSITORY IN LIFTS NOT TO EXCEED 12–INCHES AND COMPACTED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
2. COMPACTED AND SMOOTH ROLLED THE FINAL, UPPER LIFT OF WASTE MATERIALS WITHIN THE REPOSITORY AND PREPARE AS SUBGRADE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
3. INSTALLED GEOSYNTHETIC CAP MATERIALS IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
4. INSTALLED 3–FEET (MIN.) DEPTH OF COVER SOIL OVER GEOSYNTHETIC CAP MATERIALS. UPPER 1–FOOT OF COVER SOIL OVER REPOSITORY CAP CONSISTED OF ORGANIC–AMENDED COVER SOIL (SEE SPECIAL PROVISIONS).
5. TO MINIMIZE COMPACTION OF THE COVER SOIL AND POSSIBLE DAMAGE TO THE GEOSYNTHETIC CAP MATERIALS, WHEELED EQUIPMENT (HAUL TRUCKS, LOADERS, ETC.) WERE NOT ALLOWED TO DRIVE ONTO THE REPOSITORY CAP FOR DUMPING OR PLACING COVER SOIL. ONLY LOW GROUND PRESSURE (LGP) TRACKED EQUIPMENT WAS ALLOWED TO OPERATE ON THE REPOSITORY WHEN PLACING COVER SOIL.
6. SALVAGED LOGS, SLASH AND TIMBER DEBRIS FROM WITHIN REPOSITORY CLEAR CUT AREA WERE SCATTERED ALONG NORTH AND SOUTH SIDE SLOPES OF THE REPOSITORY. SALVAGED LOGS, SLASH AND TIMBER DEBRIS WERE PLACED ON THE ADJACENT AREAS.
7. FERTILIZED, SEEDED AND MULCHED THE REPOSITORY CAP AND DOZER BASIN IN ACCORDANCE WITH THE SPECIAL PROVISIONS.
8. CONTRACTOR PROTECTED REPOSITORY SURVEY CONTROL POINTS AND MONITORING WELLS FROM DAMAGE.

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | SDB DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.
SCALE HORIZ: VERT: SCALE IN FEET 0 50 100

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

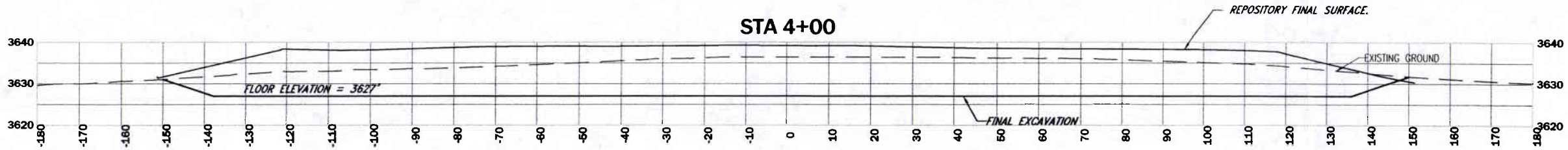
MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

REPOSITORY FINAL SURFACE GRADING PLAN

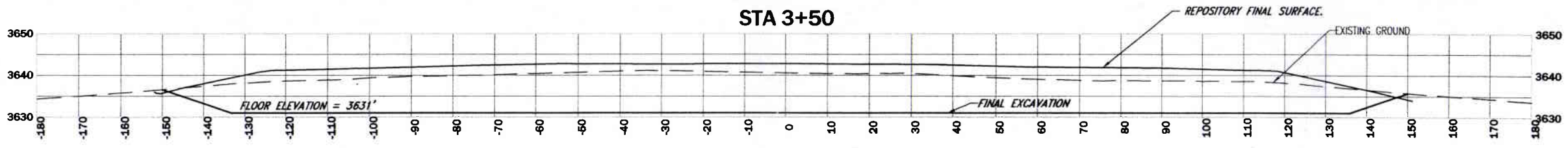
SHEET 24

12/1/2010 4:30:08 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C106-ASBUILT-10.DWG

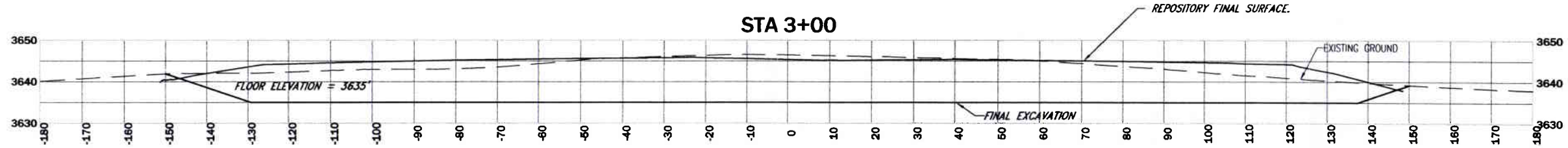
STA 4+00



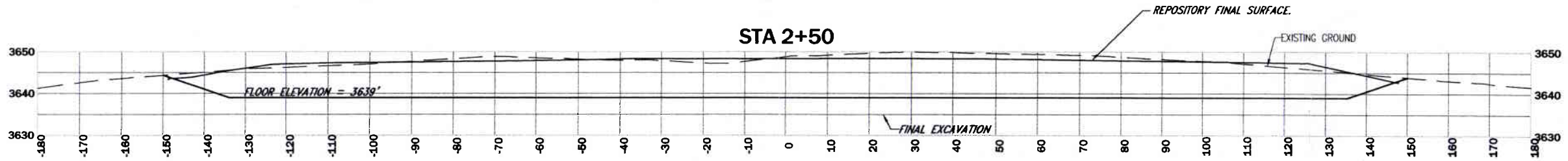
STA 3+50



STA 3+00



STA 2+50



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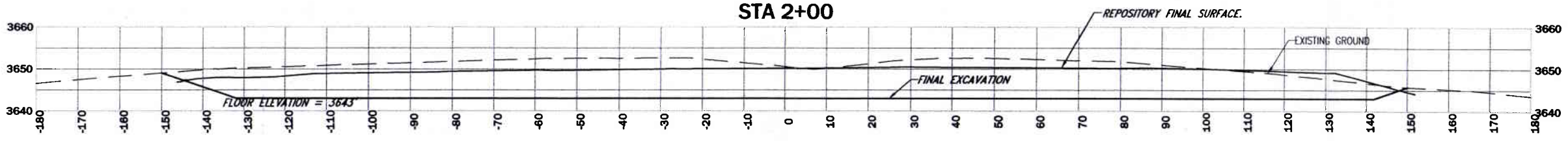
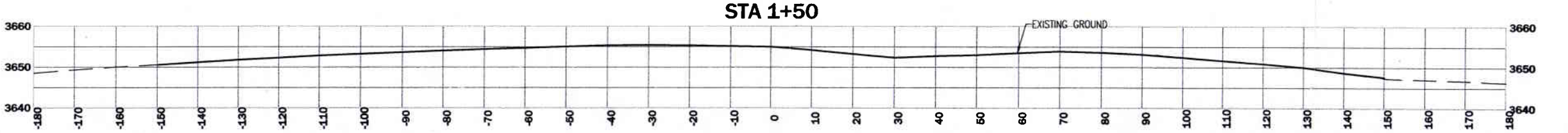


STA 1+50



NO.	BY	DATE	REVISION DESCRIPTION

CLA	SDB	MCB
DRAWN	DESIGNED	CHECKED
JSM	10/15/10	10139
APPROVED	DATE	PROJECT NO.

SCALE
HORIZ: VERT:
SCALE IN FEET
0 15 30

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

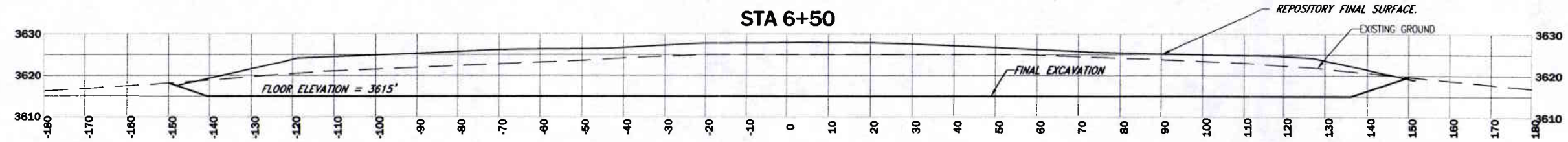
MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

REPOSITORY CROSS SECTIONS
STA 1+50 TO 4+00

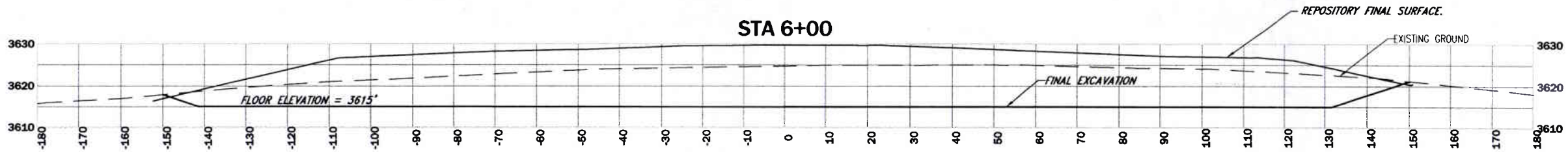
SHEET
25

10/19/2010 3:32:26 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C104-ASBUILT-10.DWG

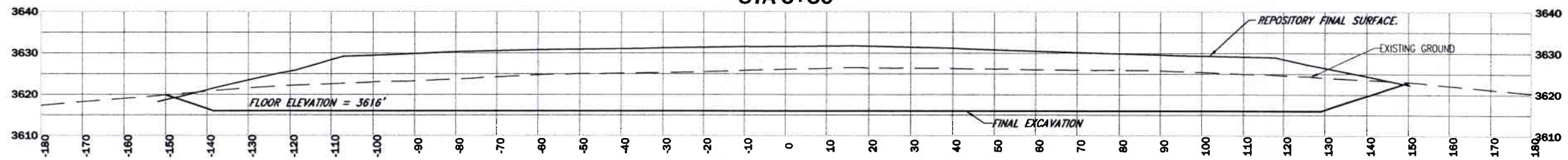
STA 6+50



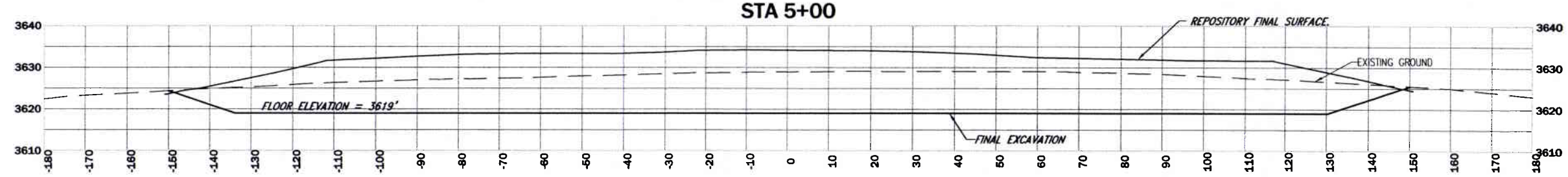
STA 6+00



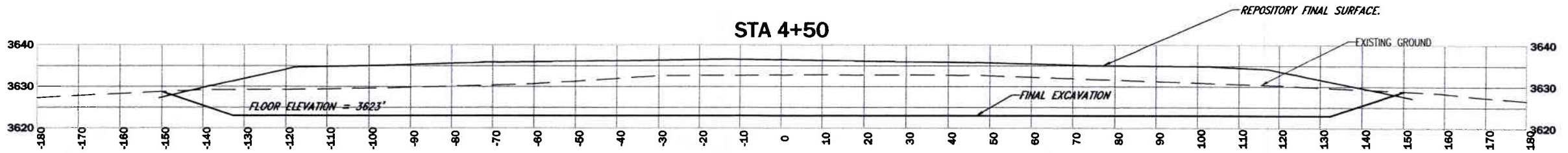
STA 5+50



STA 5+00



STA 4+50



NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | SDB DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 15 30

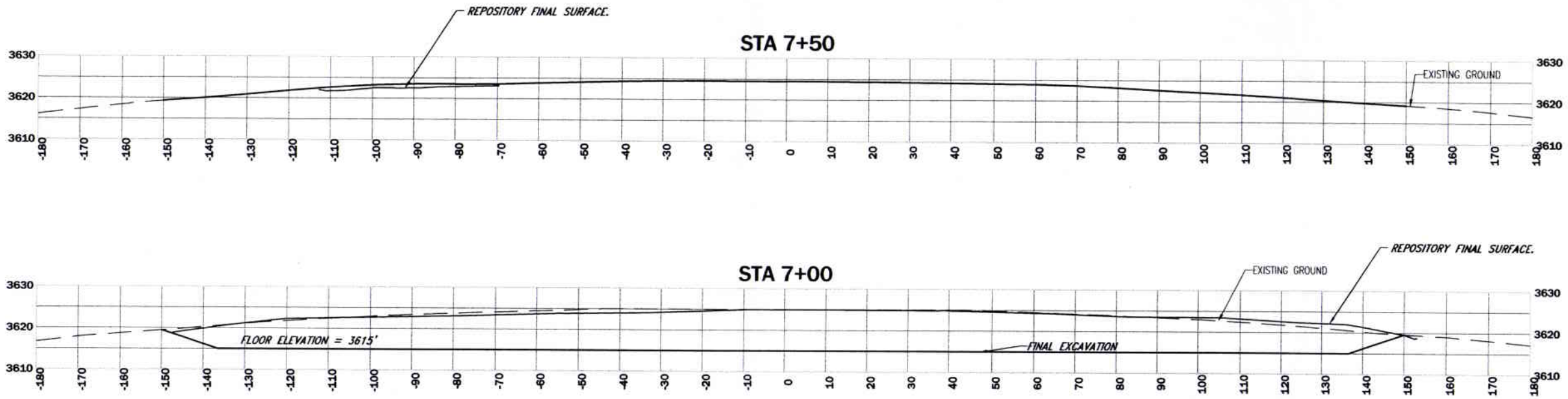
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

REPOSITORY CROSS SECTIONS
STA 4+50 TO 6+50

SHEET 26

10/15/2010 12:03:37 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C104-ASBUILT-10.DWG



WASTE VOLUME IN REPOSITORY - 64,090 BANK CUBIC YARDS

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | SDB DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 15 30

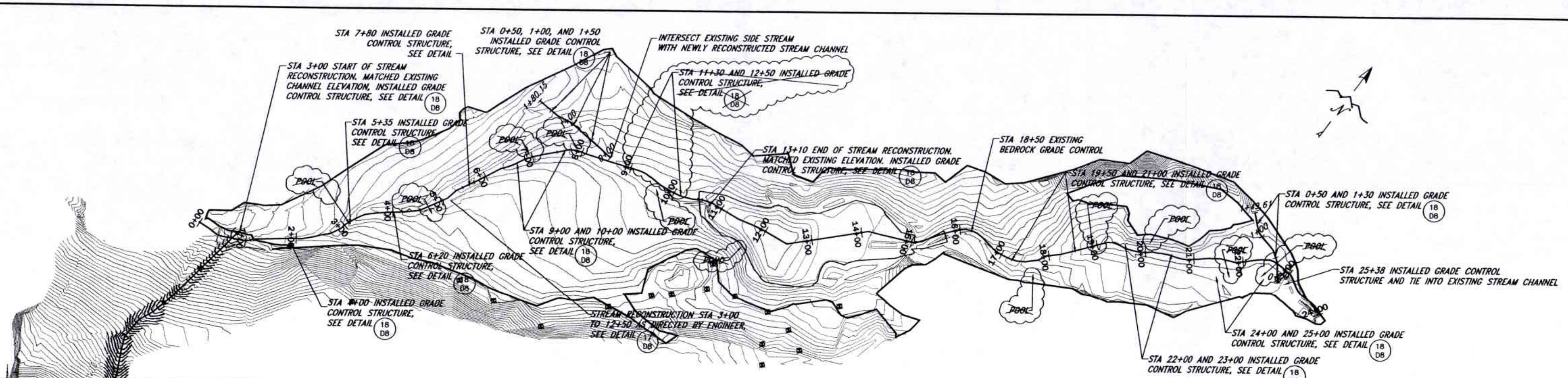
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

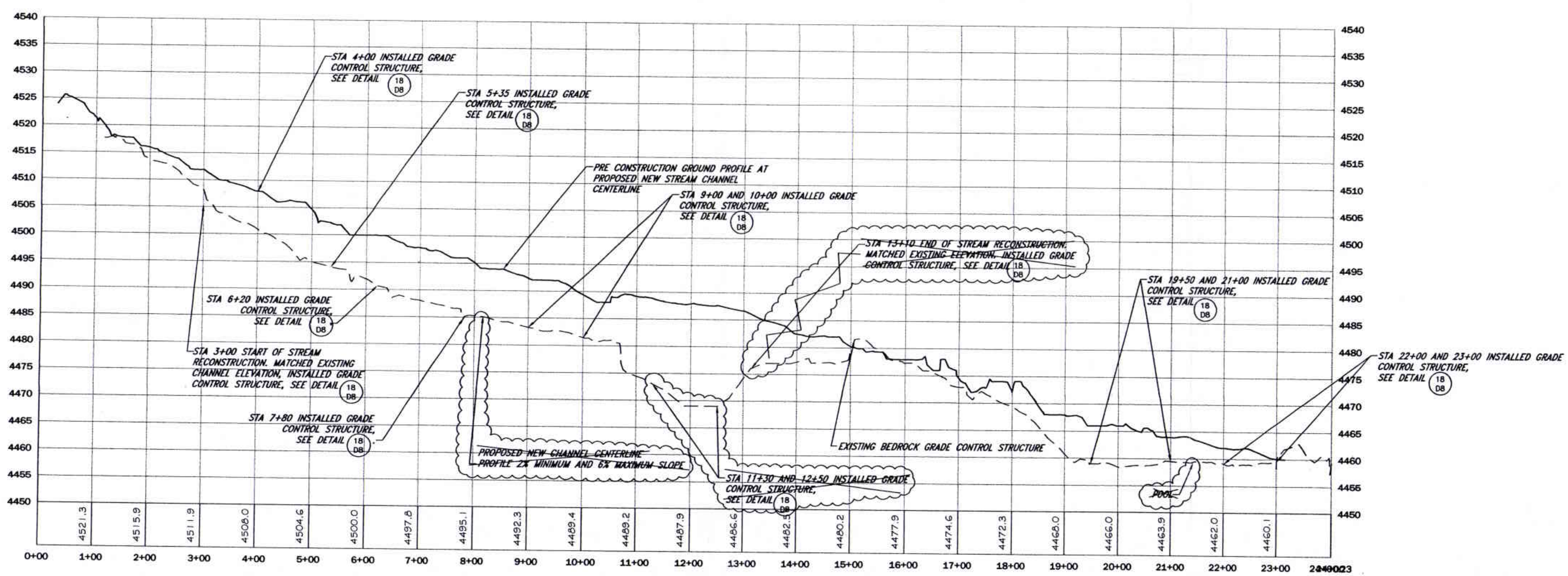
MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

REPOSITORY CROSS SECTIONS
STA 7+00 TO 7+50

SHEET 27

10/19/2010 3:32:51 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-C104-ASBUILT-10.DWG





NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN — MCB DESIGNED — MCB CHECKED — JSM APPROVED — 10/15/10 DATE — 10139 PROJECT NO.

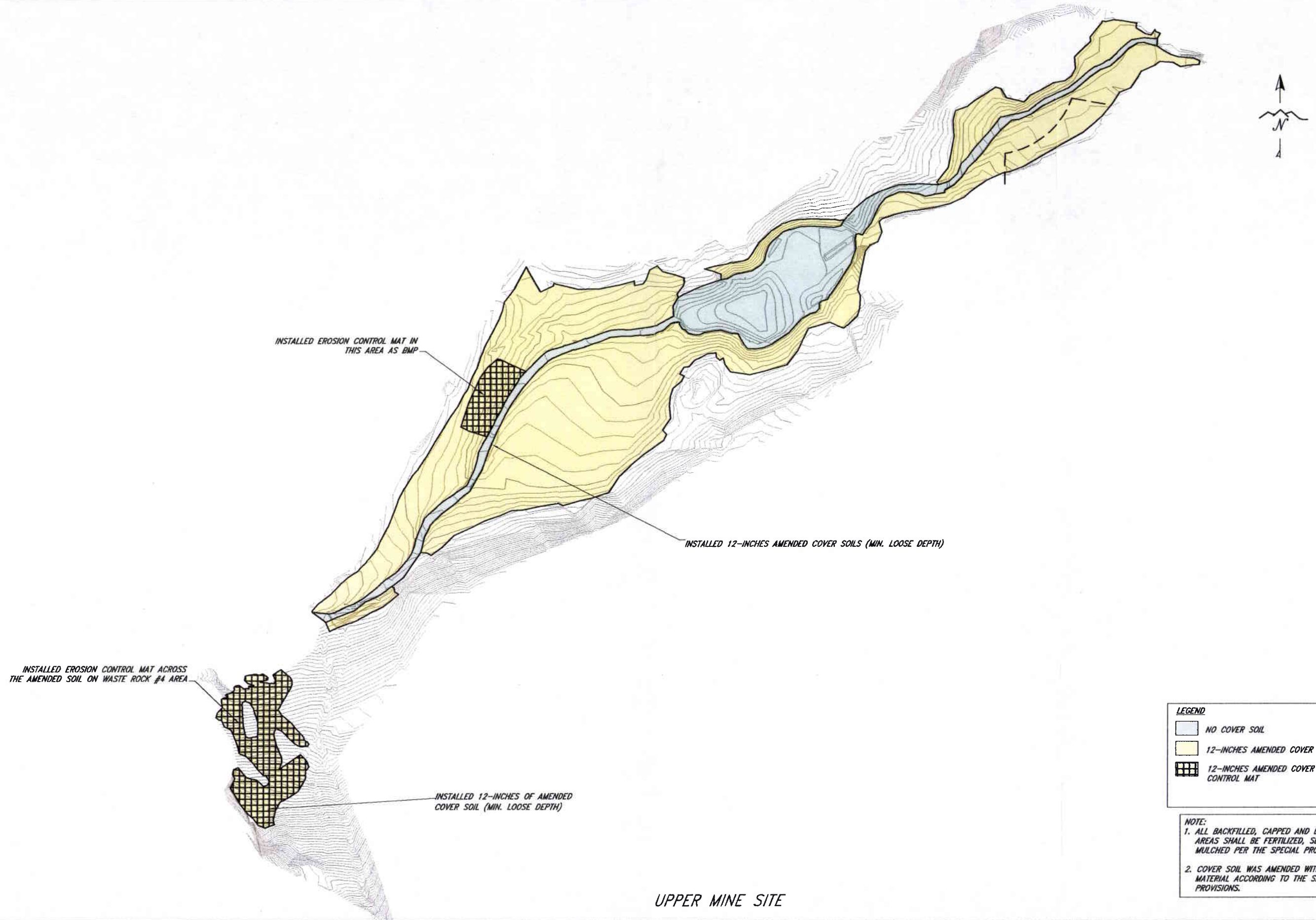
SCALE: HORIZ: VERT: 1"=10' — SCALE IN FEET 0 100 200

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

STREAM RECONSTRUCTION
(STA 3+00 TO 13+10 AND STA 18+50 TO 24+00)

SHEET 28



NOTE:
1. ALL BACKFILLED, CAPPED AND DISTURBED AREAS SHALL BE FERTILIZED, SEEDED AND MULCHED PER THE SPECIAL PROVISIONS.
2. COVER SOIL WAS AMENDED WITH ORGANIC MATERIAL ACCORDING TO THE SPECIAL PROVISIONS.

UPPER MINE SITE

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 100 200

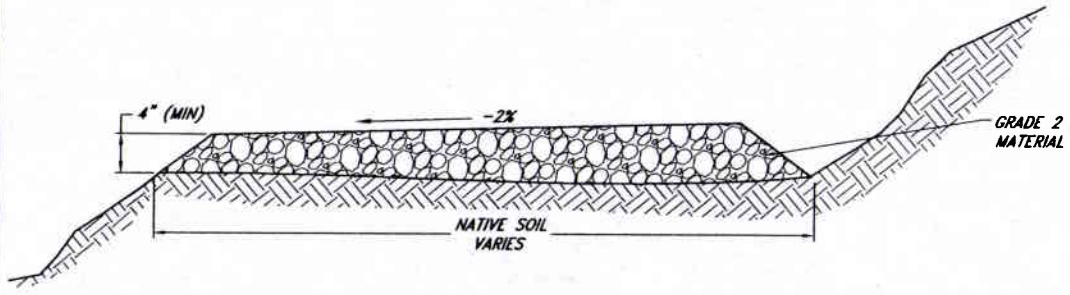
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

AMENDED COVER SOIL PLACEMENT

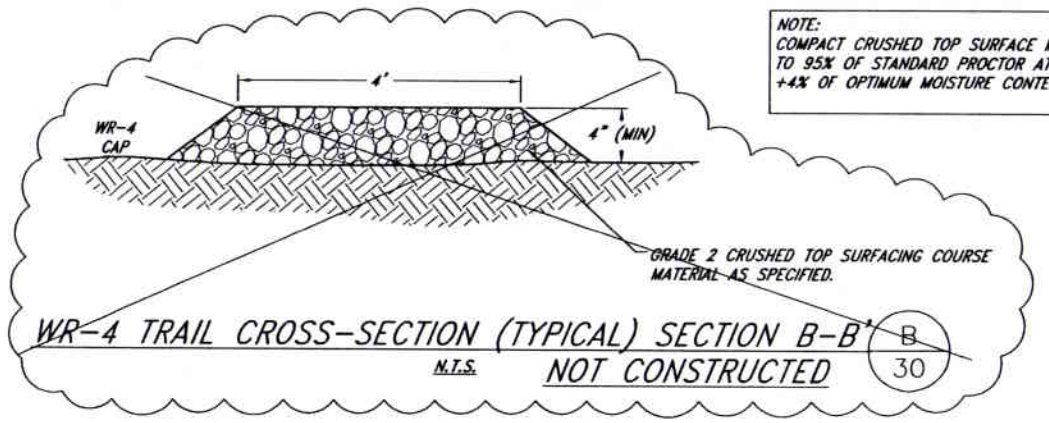
SHEET 29

12/1/2010 4:42:43 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C114-ASBUILT-10.DWG



WR-4 PARKING AREA CROSS-SECTION (TYPICAL) SECTION A-A' (A/30)

N.T.S.

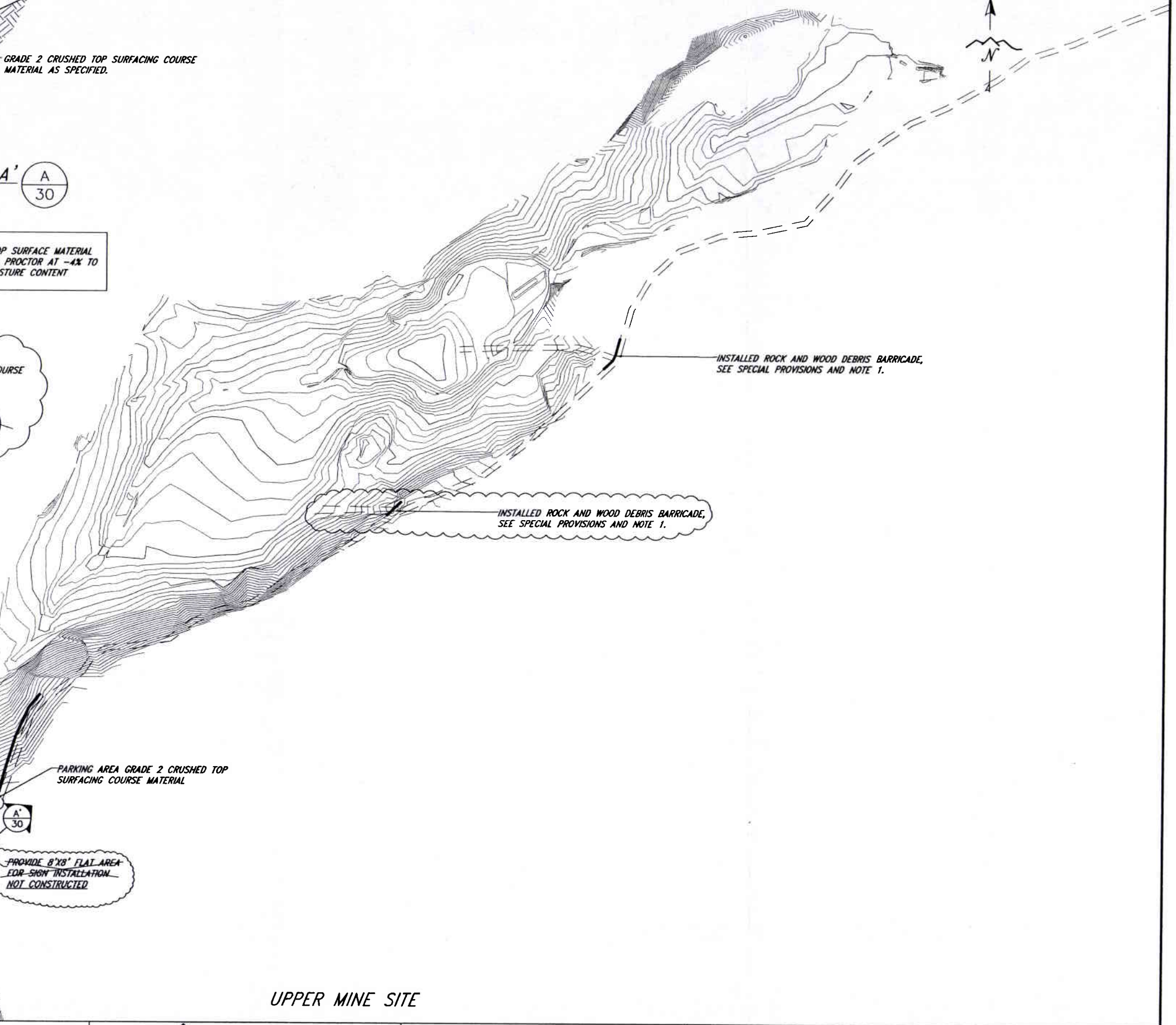


NOTE:
COMPACT CRUSHED TOP SURFACE MATERIAL TO 95% OF STANDARD PROCTOR AT -4% TO +4% OF OPTIMUM MOISTURE CONTENT

WR-4 TRAIL CROSS-SECTION (TYPICAL) SECTION B-B' (B/30)

N.T.S.

NOT CONSTRUCTED



NOTE:
1. BOULDERS USED FOR BARRICADE WERE MIN 24" DIMENSION AND WERE PLACED AT A MAX CLEARANCE SPACE OF 18" BETWEEN BOULDERS.

UPPER MINE SITE

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JJM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.
SCALE HORIZ: VERT: SCALE IN FEET 0 100 200

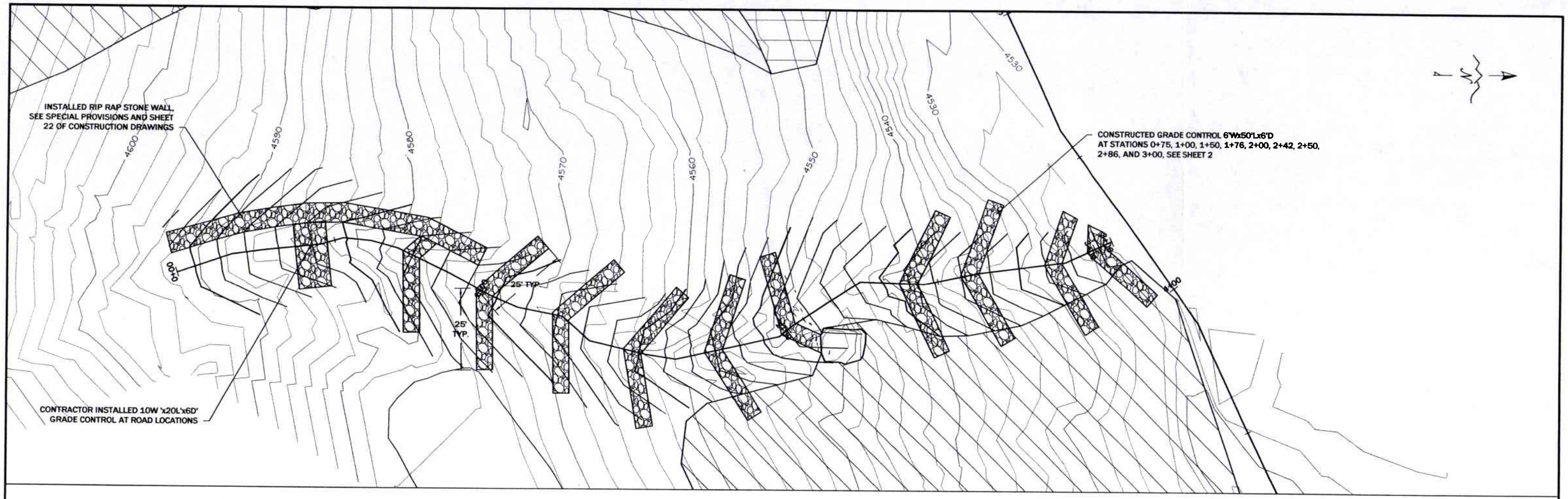
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

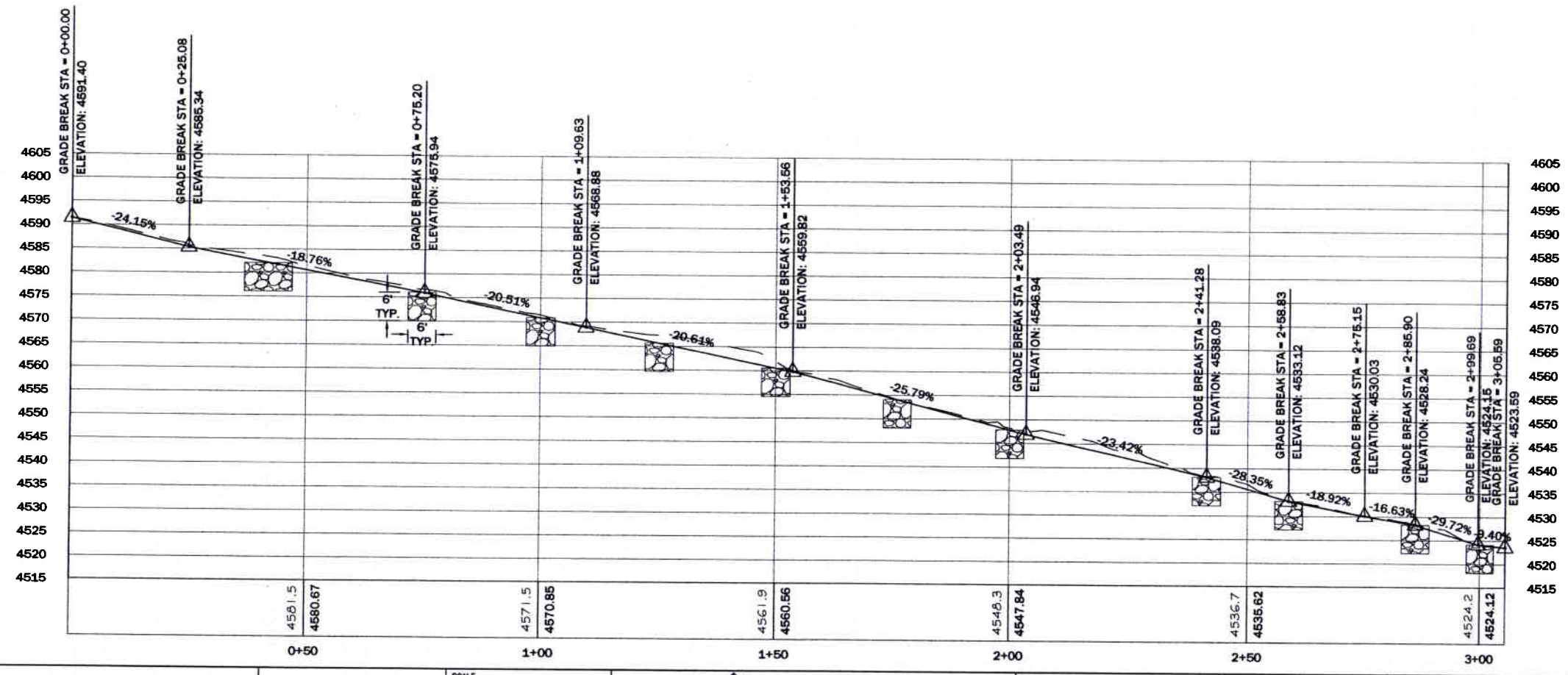
MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

PARKING AREA, TRAIL AND BARRICADES
PLAN VIEW

SHEET 30

12/3/2010 10:32:50 AM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C115-ASBUILT-10.DWG





NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JSM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE
HORIZ: NA VERT: NA
SCALE IN FEET
0 15 30

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

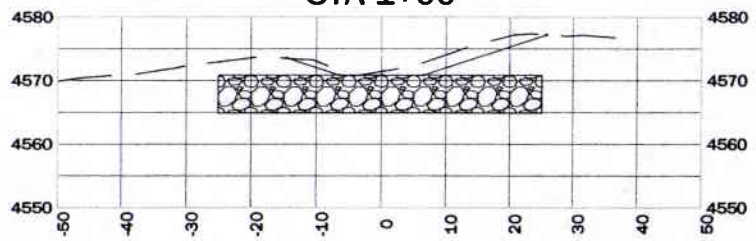
MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

WASTE ROCK #4
PLAN AND PROFILE

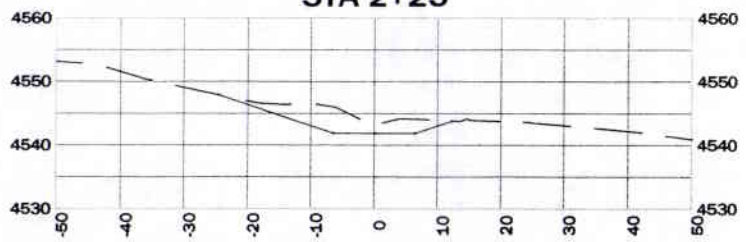
SHEET
31

10/19/2010 3:35:25 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C119-ASBUILT-10.DWG

STA 1+00



STA 2+25



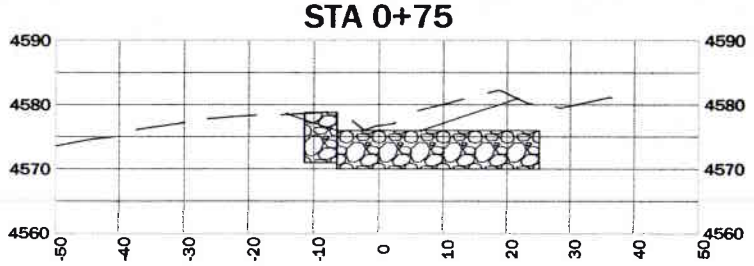
VOLUMES

WASTE ROCK EXCAVATION - 552.62 cy

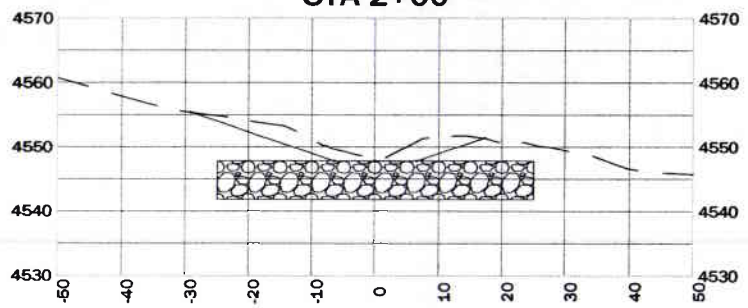
ROCK BARRICADE AND GRADE CONTROL STRUCTURES EXCAVATION - ~1200 bcy

TOTAL EXCAVATION - ~1752.62 cy

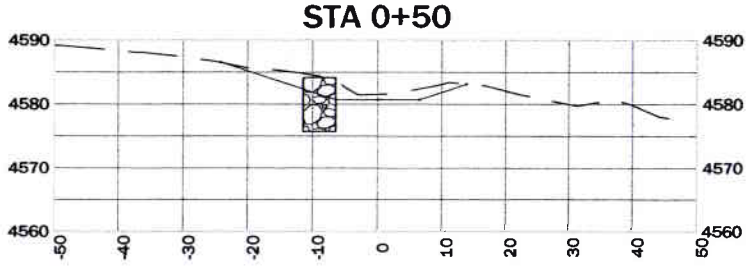
STA 0+75



STA 2+00



STA 0+50



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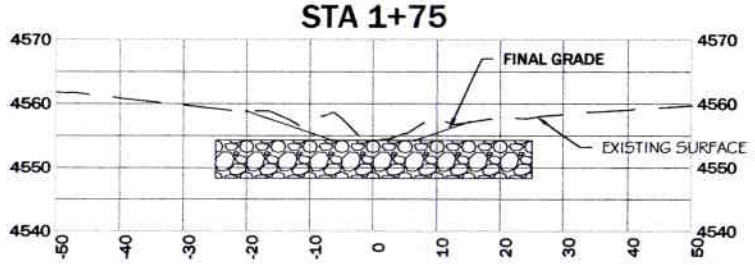

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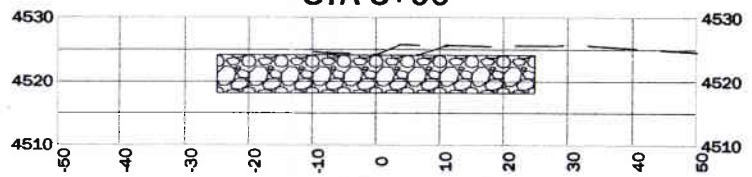

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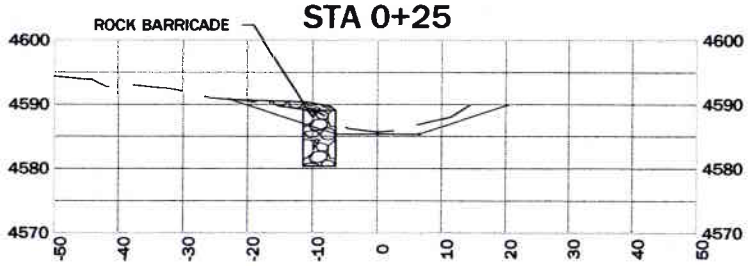

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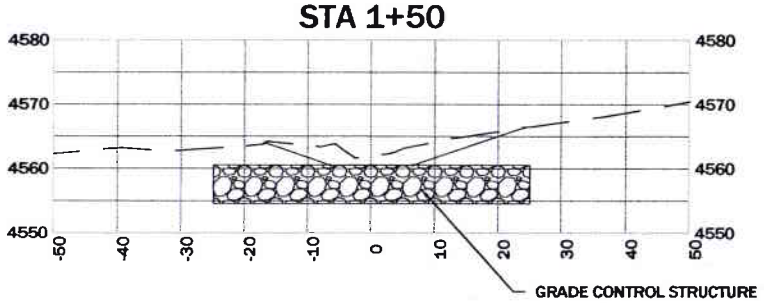

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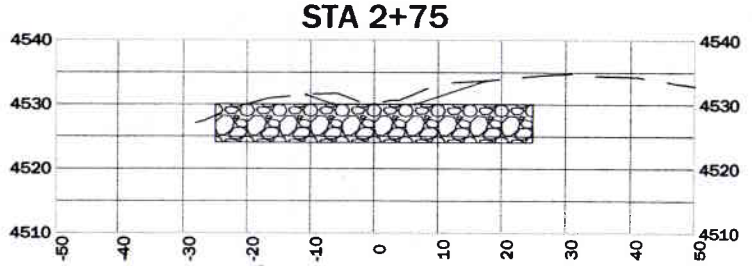

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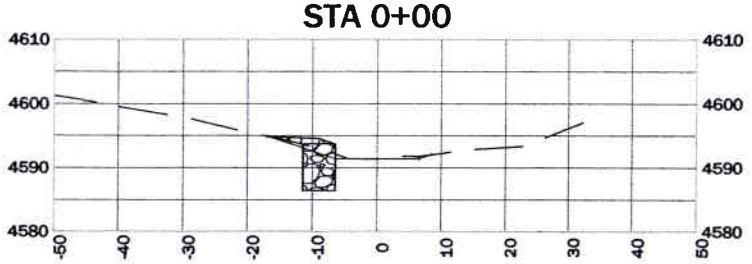

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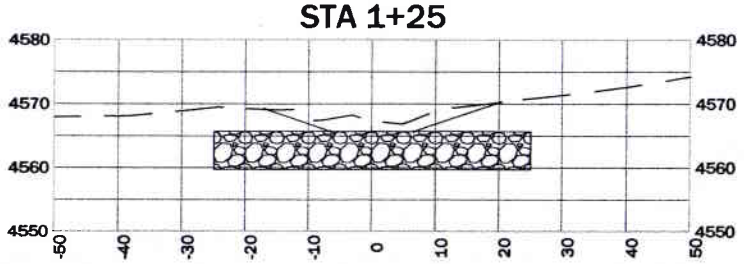

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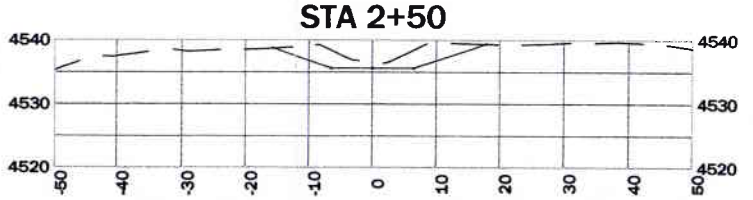

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JSM DESIGNED | MCB CHECKED

JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE
HORIZ: NA VERT: NA
SCALE IN FEET
0 15 30

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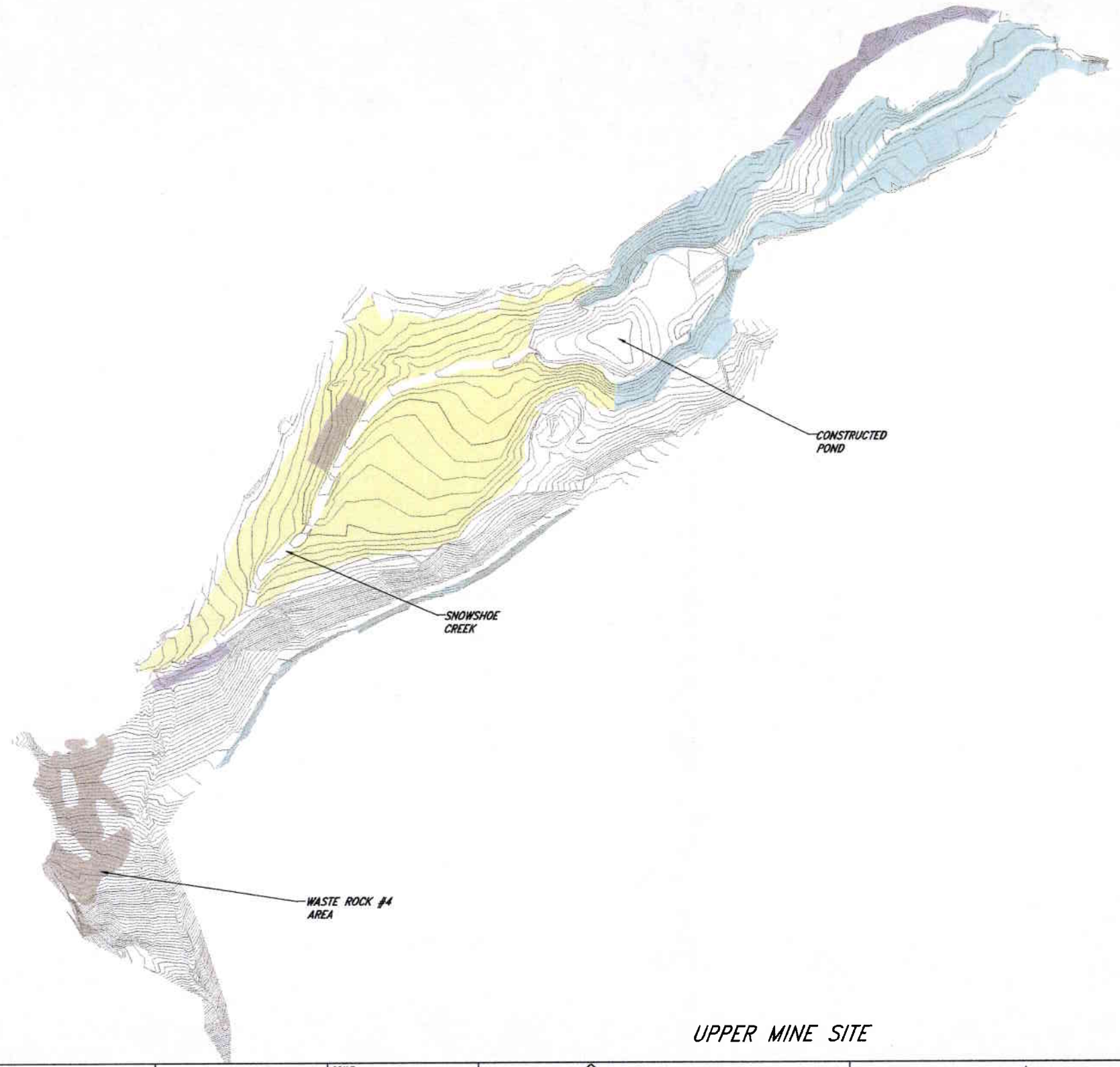
SNOWSHOE MINE SITE
RECLAMATION PROJECT

WASTE ROCK #4
CROSS SECTIONS

SHEET
32

10/13/2010 12:15:33 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-C119-ASBUILT-10.DWG



UPPER MINE SITE

NO.	BY	DATE	REVISION DESCRIPTION

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JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 125 250

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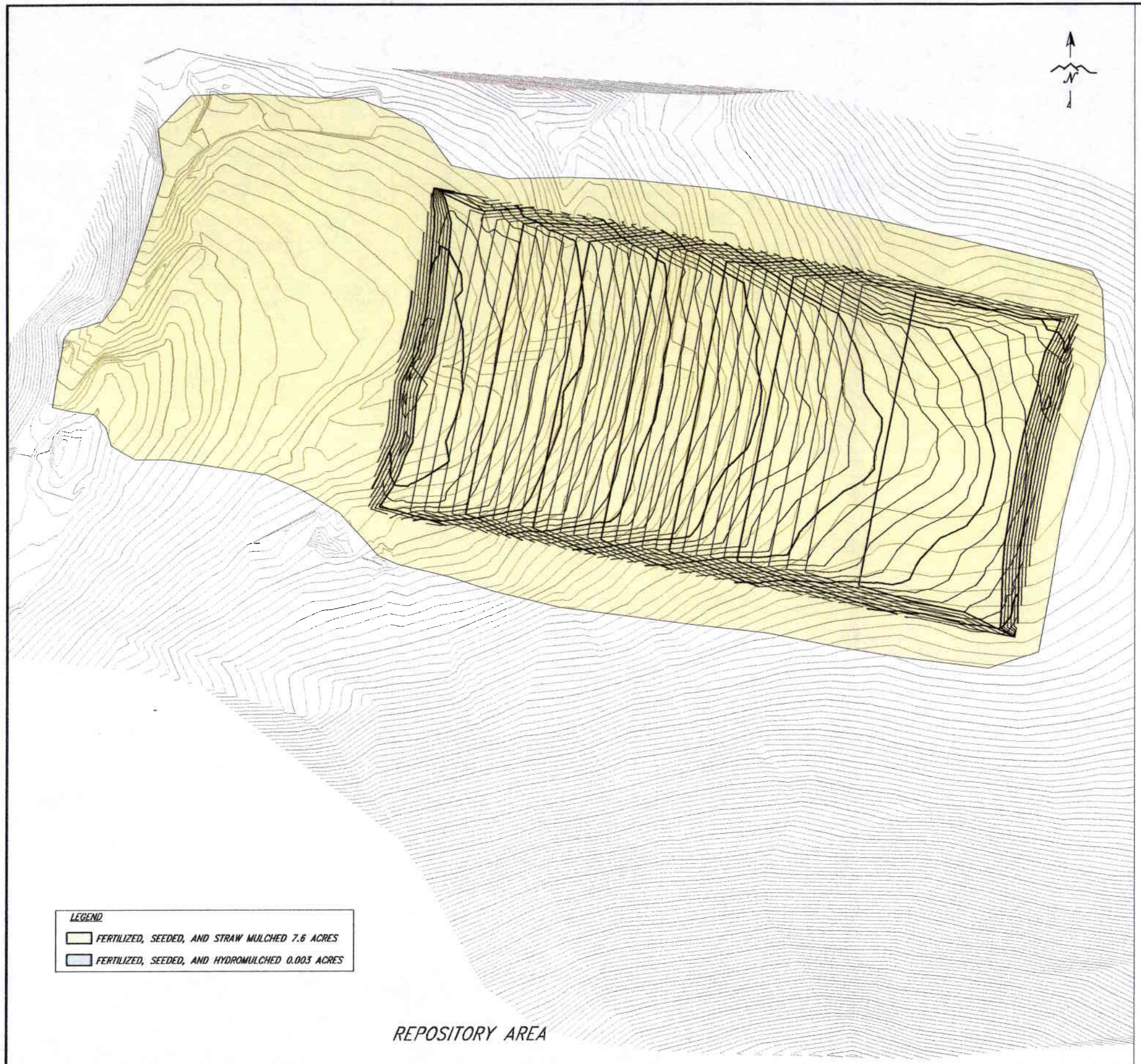
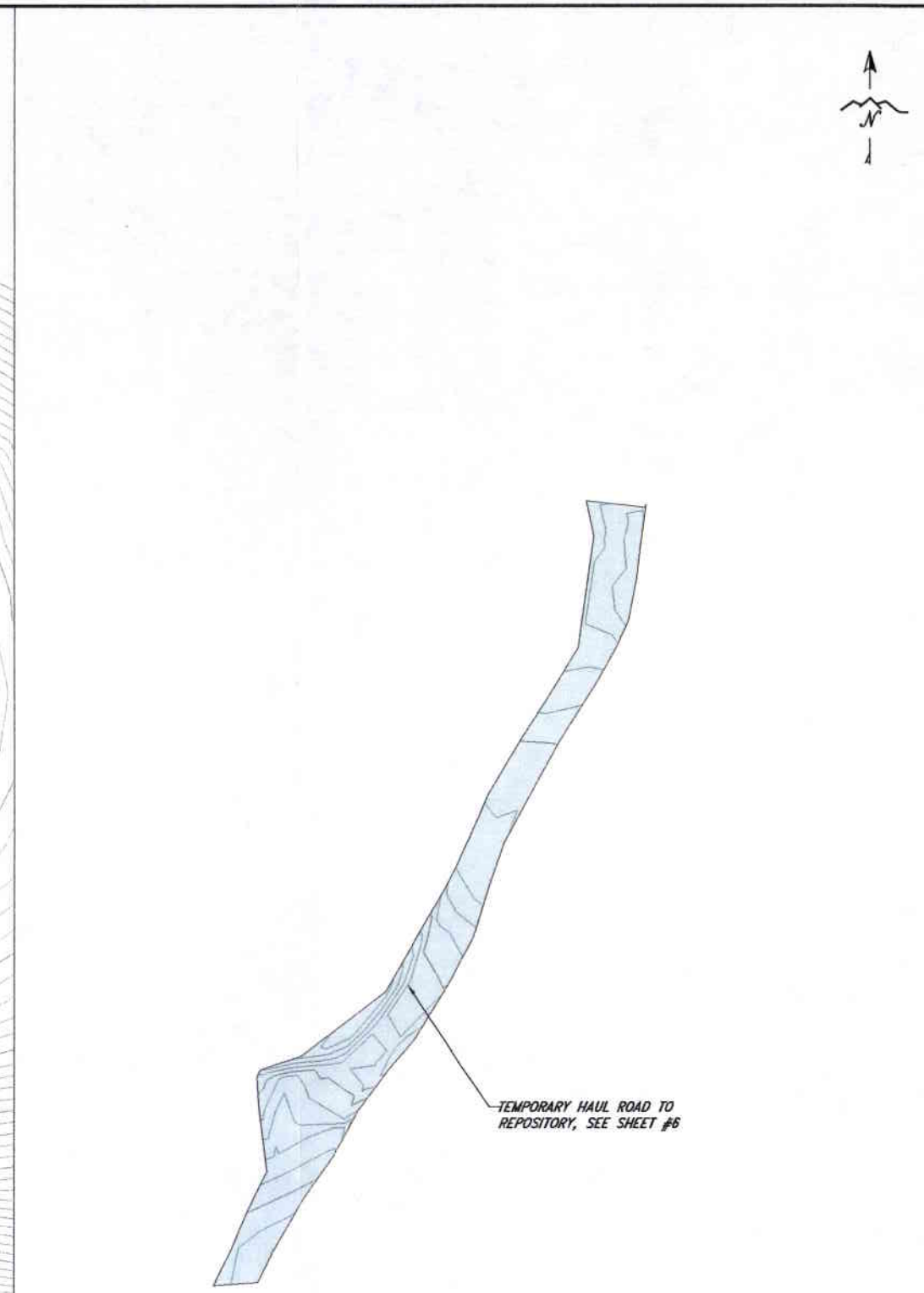
FERTILIZED, SEEDED, AND MULCHED AREAS

SHEET 33

12/8/2010 3:06:16 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C120-ASBUILT-10.DWG



REPOSITORY AREA



REPOSITORY AREA TEMPORARY HAUL ROAD

NO.	BY	DATE	REVISION DESCRIPTION

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SCALE HORIZ: VERT: SCALE IN FEET 0 50 100

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RECLAMATION PROJECT

FERTILIZED, SEEDED, AND MULCHED AREAS

SHEET 34

12/1/2010 4:32:22 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-C121-ASBUILT-10.DWG

NOTES:
1. SITE-SPECIFIC CONDITIONS MAY DICTATE WHETHER THE ROAD IS CROWNED, INSLOPED, OR OUTSLOPED TO PROVIDE PROPER DRAINAGE. DURING ROAD IMPROVEMENT ACTIVITIES, THE CONTRACTOR SHALL DETERMINE THOSE REACHES OF THE ROADWAY WHERE FINISH GRADING WILL CONSIST OF CROWNING, INSLOPING, OR OUTSLOPING. CROWNING, INSLOPING, OR OUTSLOPING IS SUBJECT TO APPROVAL BY THE ENGINEER.

2. INSTALL CULVERTS AT LOCATIONS SPECIFIED ON SHEET D2.

3. CUT INSIDE SLOPE AS NECESSARY TO WIDEN ROAD.

4. MAXIMUM FILL SLOPE IS 2H:1V. DO NOT PLACE FILL ON STEEP SLOPE AREAS.

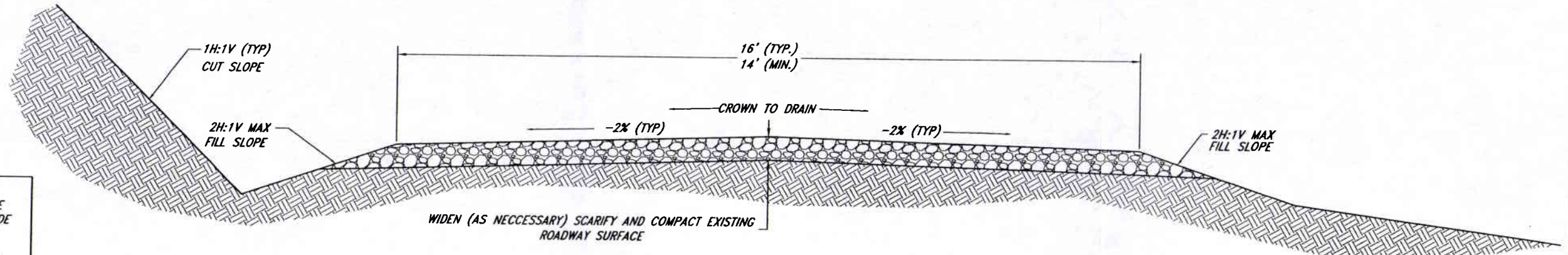
5. SCARIFY AND RE-COMPACT EXISTING ROADWAY SURFACE MATERIALS TO CREATE A SMOOTH ROAD SURFACE ADEQUATE TO SERVE THE CONTRACTOR'S EQUIPMENT.

6. IMPORT, INSTALL AND COMPACT ROAD SURFACE AGGREGATE IN EXISTING ROCKY AREAS DETERMINED BY CONTRACTOR TO REQUIRE ADDITIONAL ROAD SURFACING MATERIALS TO SERVE THE CONTRACTOR'S EQUIPMENT.

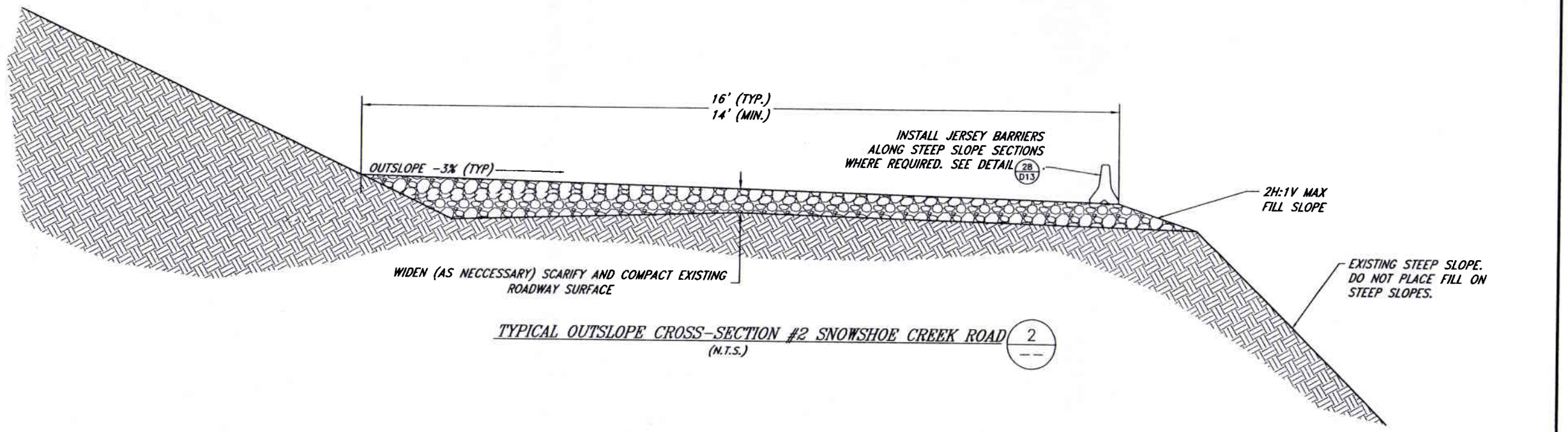
7. CONSTRUCT TURNOUTS AT APPROPRIATE LOCATIONS APPROVED BY ENGINEER.

8. CLEAR AND GRUB AS NEEDED OR AS DIRECTED BY THE ENGINEER.

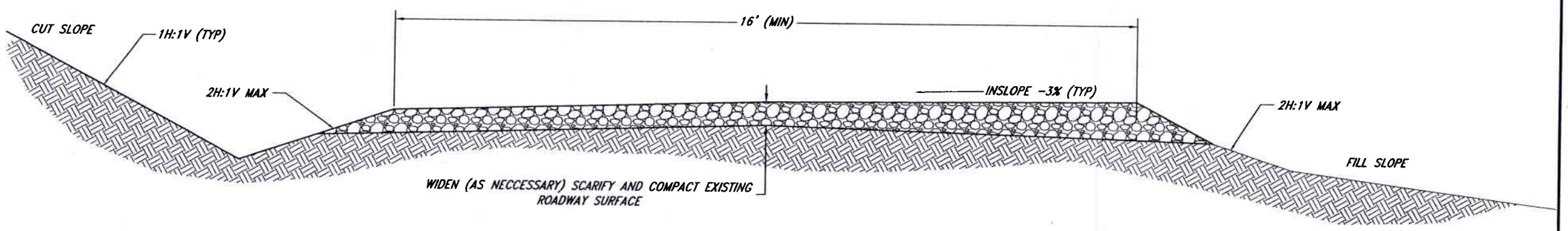
9. CONSTRUCT DRAINAGE DIPS OVER CULVERTS AS SHOWN ON DETAIL (5/D2) AFTER CONSTRUCTION ACTIVITIES ARE COMPLETE.



TYPICAL CROWNED CROSS-SECTION #1 SNOWSHOE CREEK ROAD (1/--)
(N.T.S.)



TYPICAL OUTSLOPE CROSS-SECTION #2 SNOWSHOE CREEK ROAD (2/--)
(N.T.S.)



TYPICAL INSLOPE CROSS-SECTION #3 SNOWSHOE CREEK ROAD (3/--)
(N.T.S.)

NO.	BY	DATE	REVISION DESCRIPTION

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SCALE HORIZ: VERT: SCALE IN FEET 0

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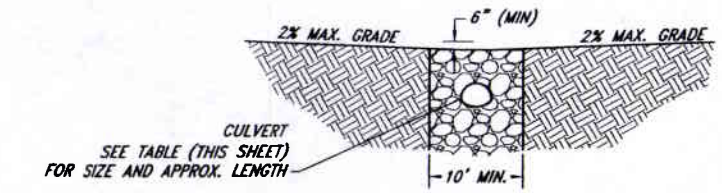
RECLAMATION PROJECT

TYPICAL CROSS-SECTIONS
SNOWSHOE CREEK ROAD

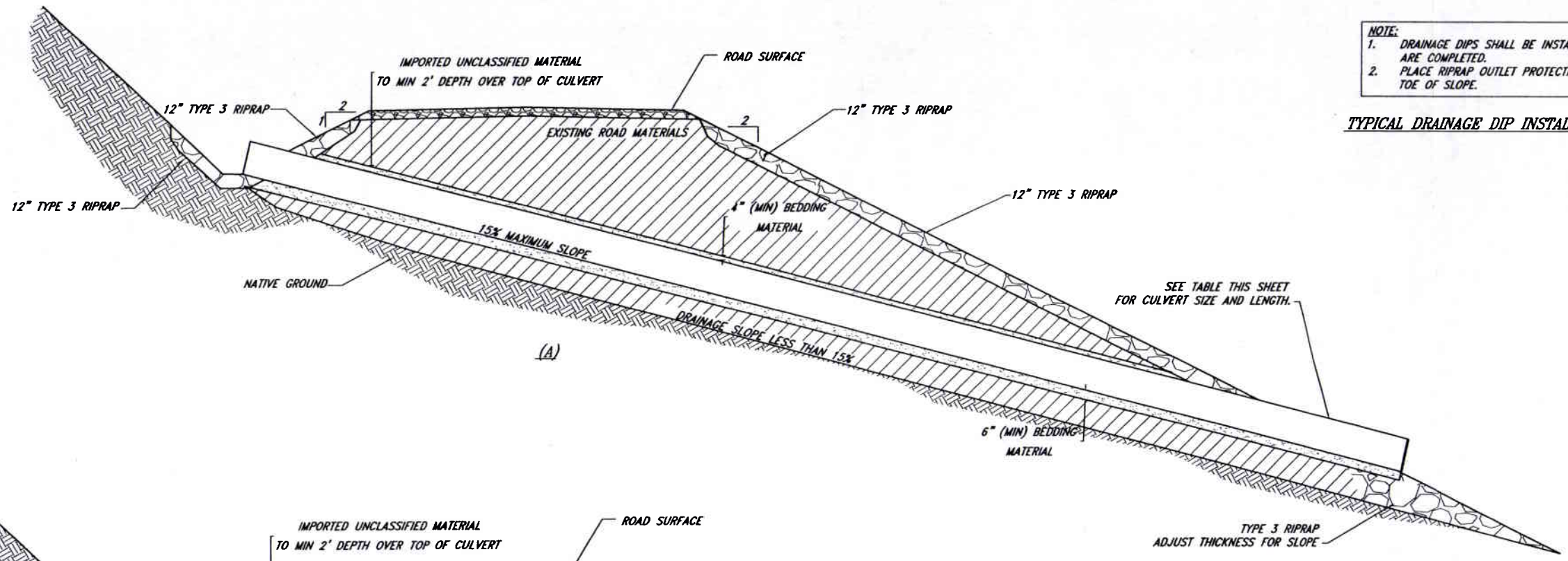
SHEET D1

10/18/2010 4:11:40 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-D120-ASBUILT-10.DWG

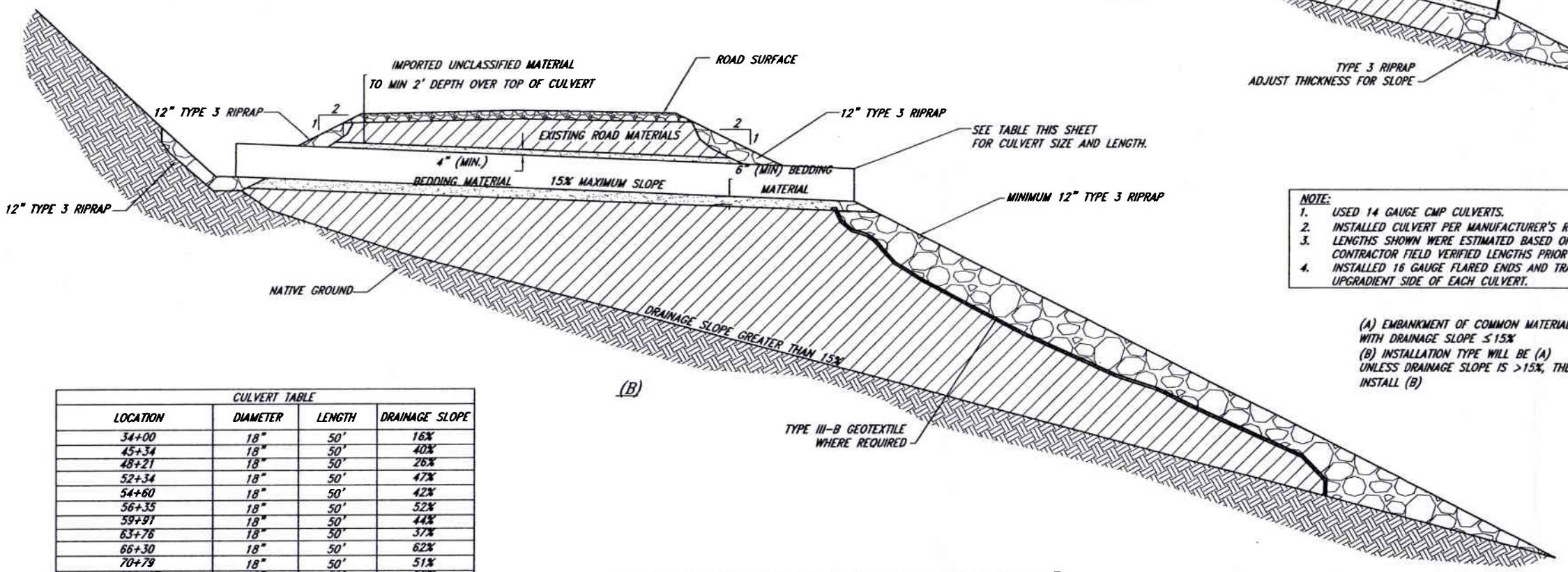


NOTE:
1. DRAINAGE DIPS SHALL BE INSTALLED AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED.
2. PLACE RIPRAP OUTLET PROTECTION FROM CREST TO TOE OF SLOPE.

TYPICAL DRAINAGE DIP INSTALLATION SNOWSHOE CREEK ROAD 5
(N.T.S.)



(A)



(B)

CULVERT TABLE			
LOCATION	DIAMETER	LENGTH	DRAINAGE SLOPE
34+00	18"	50'	16%
45+34	18"	50'	40%
48+21	18"	50'	26%
52+34	18"	50'	47%
54+60	18"	50'	42%
56+35	18"	50'	52%
59+91	18"	50'	44%
63+76	18"	50'	37%
66+30	18"	50'	62%
70+79	18"	50'	51%
101+17	18"	50'	55%
117+37	18"	50'	88%
118+96	18"	50'	45%

NOTE:
1. USED 14 GAUGE CMP CULVERTS.
2. INSTALLED CULVERT PER MANUFACTURER'S RECOMMENDATIONS.
3. LENGTHS SHOWN WERE ESTIMATED BASED ON TYPICAL SECTION. CONTRACTOR FIELD VERIFIED LENGTHS PRIOR TO CONSTRUCTION.
4. INSTALLED 16 GAUGE FLARED ENDS AND TRASH RACKS ON UPGRADIENT SIDE OF EACH CULVERT.

(A) EMBANKMENT OF COMMON MATERIAL WITH DRAINAGE SLOPE ≤ 15%
(B) INSTALLATION TYPE WILL BE (A) UNLESS DRAINAGE SLOPE IS >15%, THEN INSTALL (B)

TYPICAL CULVERT INSTALLATION SNOWSHOE CREEK ROAD 4
(N.T.S.)

NO.	BY	DATE	REVISION DESCRIPTION

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SCALE HORIZ: VERT: SCALE IN FEET 0

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TYPICAL CULVERT INSTALLATION DETAIL
SNOWSHOE CREEK ROAD

SHEET D2

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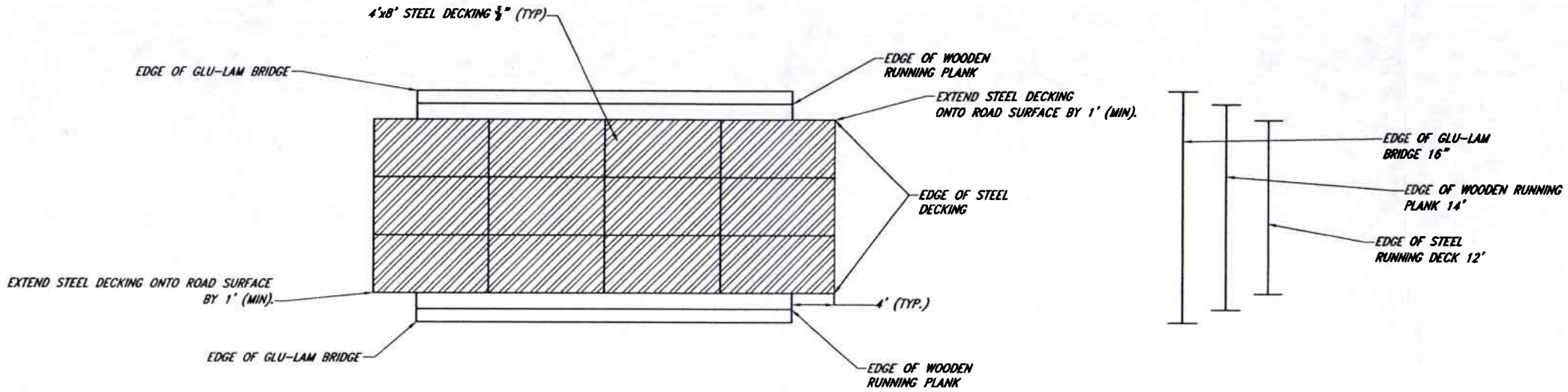
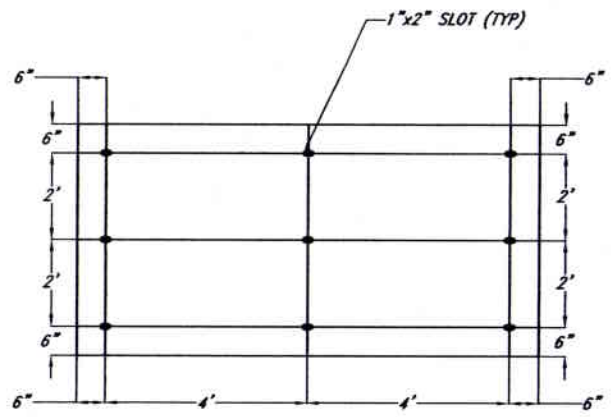
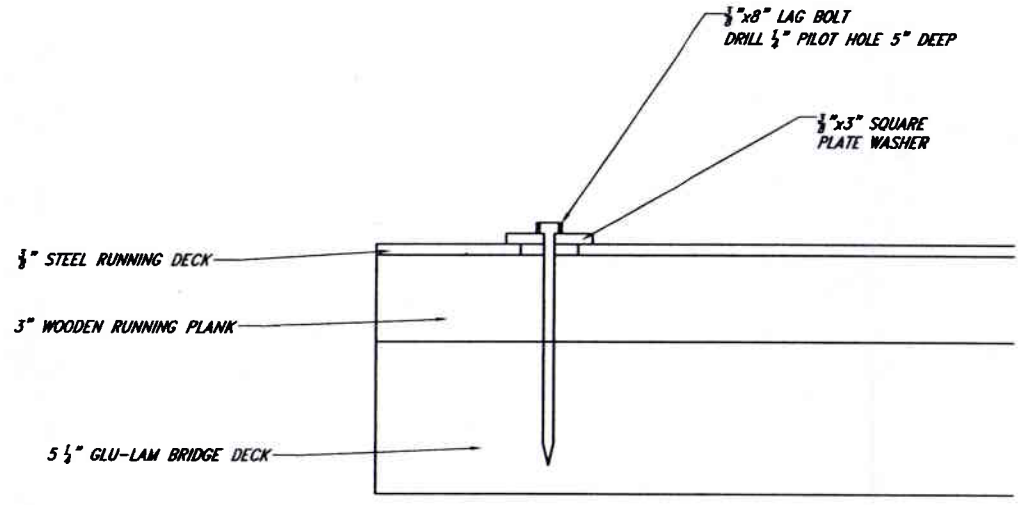


BRIDGE DECK GENERAL LAYOUT
(NOT TO SCALE)



4'x8' STEEL DECK SLOT LAYOUT
(NOT TO SCALE)



LAG BOLT AND WASHER DETAIL
(NOT TO SCALE)

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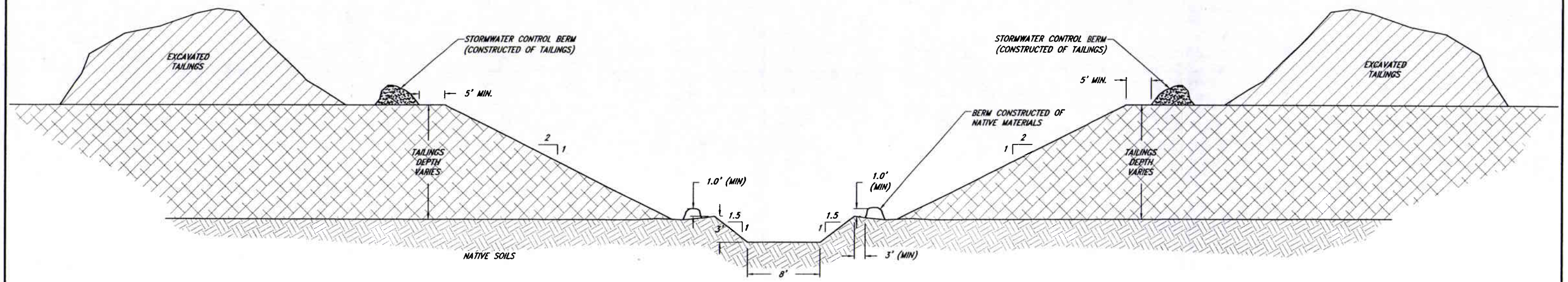
RECLAMATION PROJECT

LEIGH CREEK BRIDGE
DECK PROTECTION DETAILS

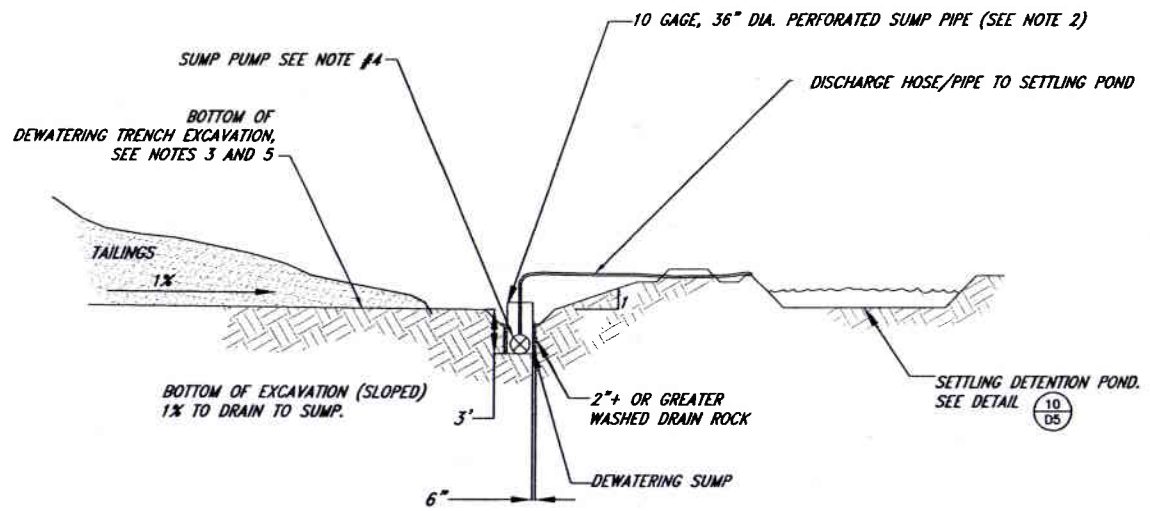
SHEET
D3

10/19/2010 3:38:15 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-D115-ASBUILT-10.DWG

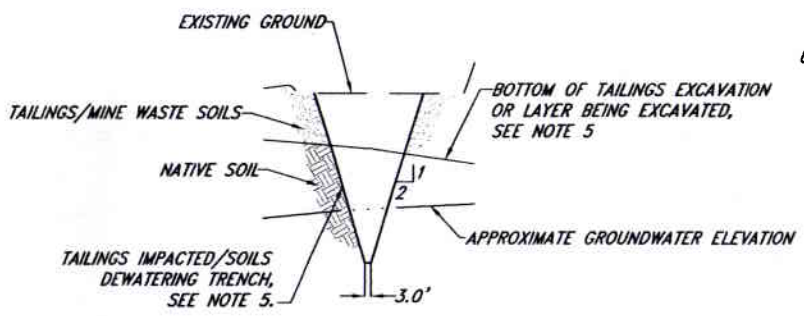


TYPICAL DEWATERING TRENCH CROSS SECTION 6
STATION 3+00 TO 13+10

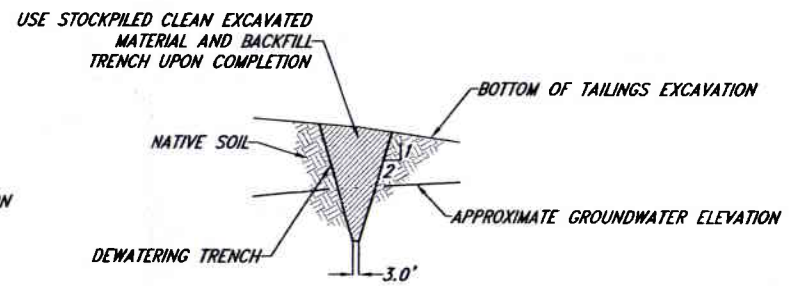
NOT TO SCALE



TYPICAL DEWATERING SUMP 7
NOT TO SCALE



TYPICAL DEWATERING TRENCH EXCAVATION DETAIL 8



TYPICAL DEWATERING TRENCH OBLITERATION DETAIL 9

NOTES:
1. EXCAVATED DEWATERING TRENCH FROM DOWNGRADIENT TO UPGRADIENT.
2. PROVIDED A 10 GAGE, 36" DIAMETER CMP FOR THE SUMP PIPE. OPEN SPACE OF PERFORATIONS IN SUMP PIPE SHALL EXCEED 1,000 SQUARE INCHES.
3. SLOPED TRENCH TOWARD DOWNGRADIENT DEWATERING SUMP.
4. PROVIDED A DEWATERING SUMP PUMP WITH A VARIABLE CAPACITY FROM 50gpm TO 500gpm.
5. IT MAY BE NECESSARY TO EXCAVATE THE TAILINGS FROM STATION 13+10 TO 18+75 IN VERTICAL LAYERS TO ACHIEVE DEWATERING. THIS MAY REQUIRE INSTALLATION OF MORE THEN ONE DEWATERING SUMP OR MOVEMENT OF THE DEWATERING SUMPS AS THE SPECIFIED TAILINGS EXCAVATION DEPTHS ARE ACHIEVED.

NO.	BY	DATE	REVISION DESCRIPTION

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SCALE HORZ: VERT: SCALE IN FEET 0

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DEWATERING DETAILS

SHEET D4

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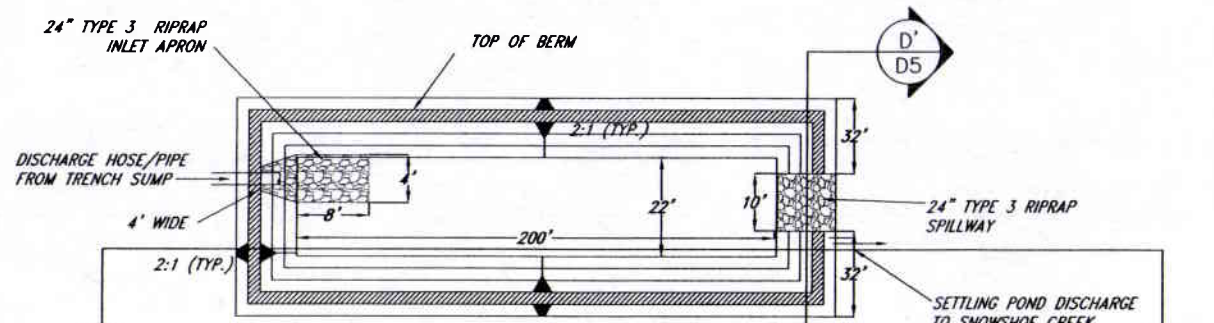


PLAN VIEW

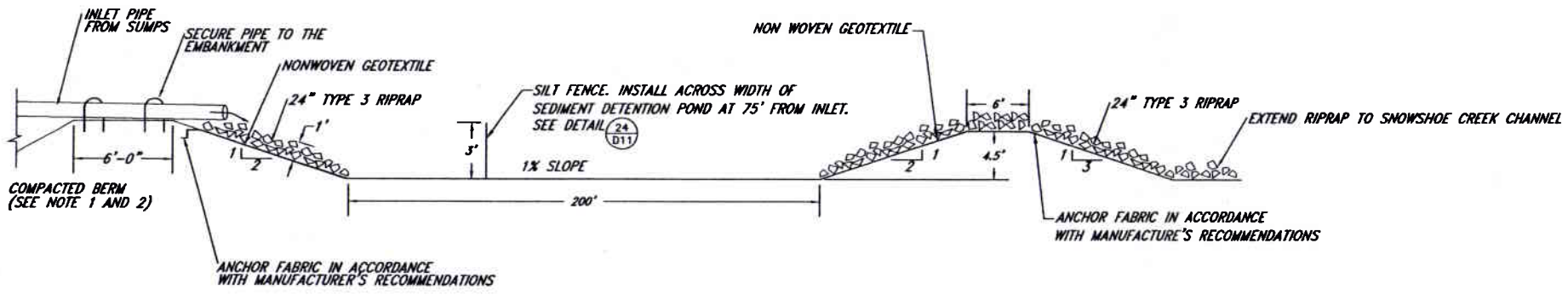
SEDIMENT DETENTION POND
SIZE AND OUTLET TYPE

PUMPING RATE	LENGTH* (FEET)	WIDTH* (FEET)	DEPTH (FEET)
500 GPM	200	22	4.5

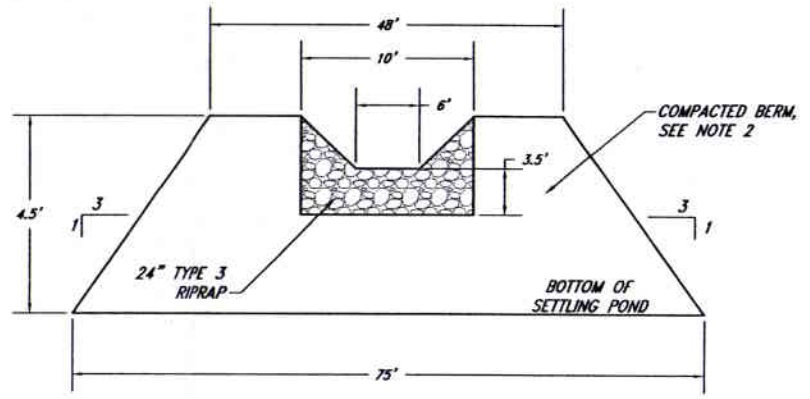
*BOTTOM OF POND DIMENSIONS

SEDIMENT DETENTION POND (10)
NOT TO SCALE

NOTES:
1. REMOVED TAILINGS MATERIALS FROM AREA TO BE UTILIZED FOR SEDIMENT DETENTION POND. DISPOSED OF TAILINGS MATERIAL IN REPOSITORY.
2. CONSTRUCTED THE SETTLING POND BERM USING CLEAN IMPORTED STRUCTURAL MATERIAL FROM REPOSITORY EXCAVATION. PLACE FILL AS A STRUCTURAL EMBANKMENT AND COMPACT TO 95% OF MAXIMUM DRY DENSITY +/- 4% OF OPTIMUM MOISTURE. SCARIFY EACH COMPACTED LIFT TO A DEPTH OF AT LEAST 2" PRIOR TO THE PLACEMENT OF THE NEXT LIFT.
3. CONSTRUCTED AN 8' LONG x 4' WIDE TYPE 3 RIPRAP SETTLING POND INLET APRON.



SEDIMENT DETENTION POND SECTION C–C' (C / D5)
NOT TO SCALE



SEDIMENT DETENTION POND SECTION D–D' (D / D5)
NOT TO SCALE

NO.	BY	DATE	REVISION DESCRIPTION

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SEDIMENT DETENTION POND
DETAILS

SHEET D5

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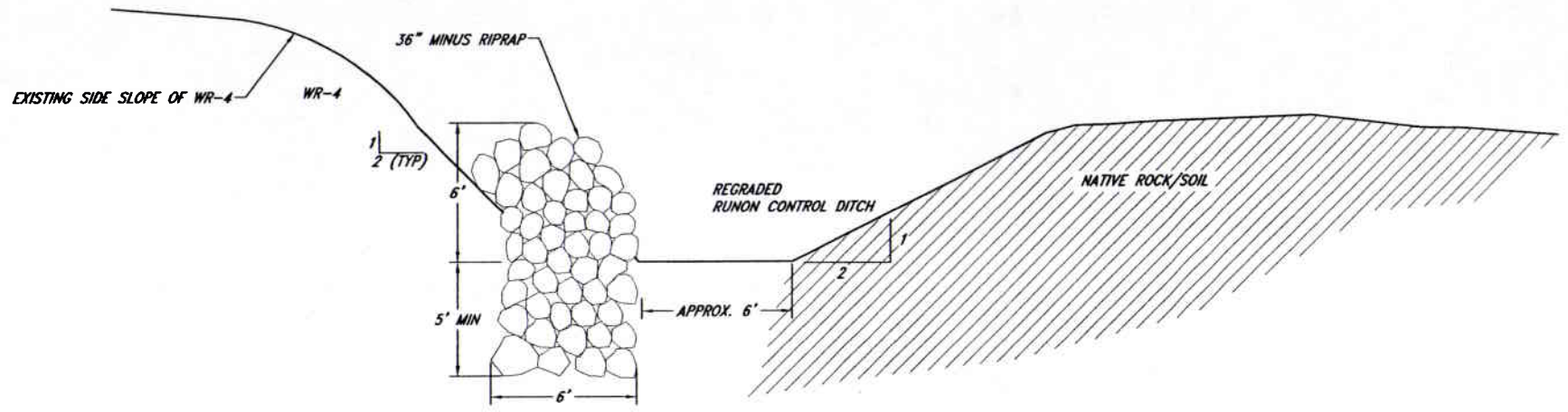
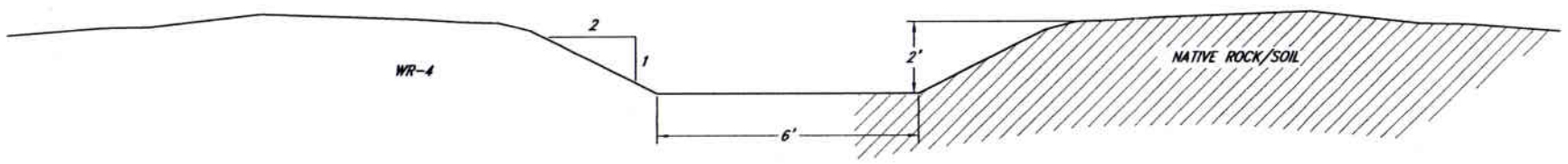


WR-4 RUNON CONTROL DITCH RIPRAP STONE WALL (TYP) (11/22)

N.T.S.



WR-4 RUNON CONTROL DITCH (TYP) (12/22)

N.T.S.

NOTES:
1. REMOVE AND DISPOSE OF EXISTING GEOTEXTILE FABRIC WITHIN DITCH AREA

2. EXCAVATE AND RE-SHAPE EXISTING DITCH TO STABLE CONDITION IN ACCORDANCE WITH DIMENSIONS AND SLOPES SHOWN ON THIS SHEET.

3. INSTALL RIPRAP (5' MIN.) BELOW INVERT OF RECONDITIONED DITCH AT LOCATION SHOWN ON SHEET 22.

4. ALL AREAS DISTURBED BY DITCH CONSTRUCTION SHALL BE FERTILIZED, SEEDED, AND MULCHED IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

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SCALE HORIZ: VERT: SCALE IN FEET 0

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WR-4
DITCH DETAILS

SHEET D6

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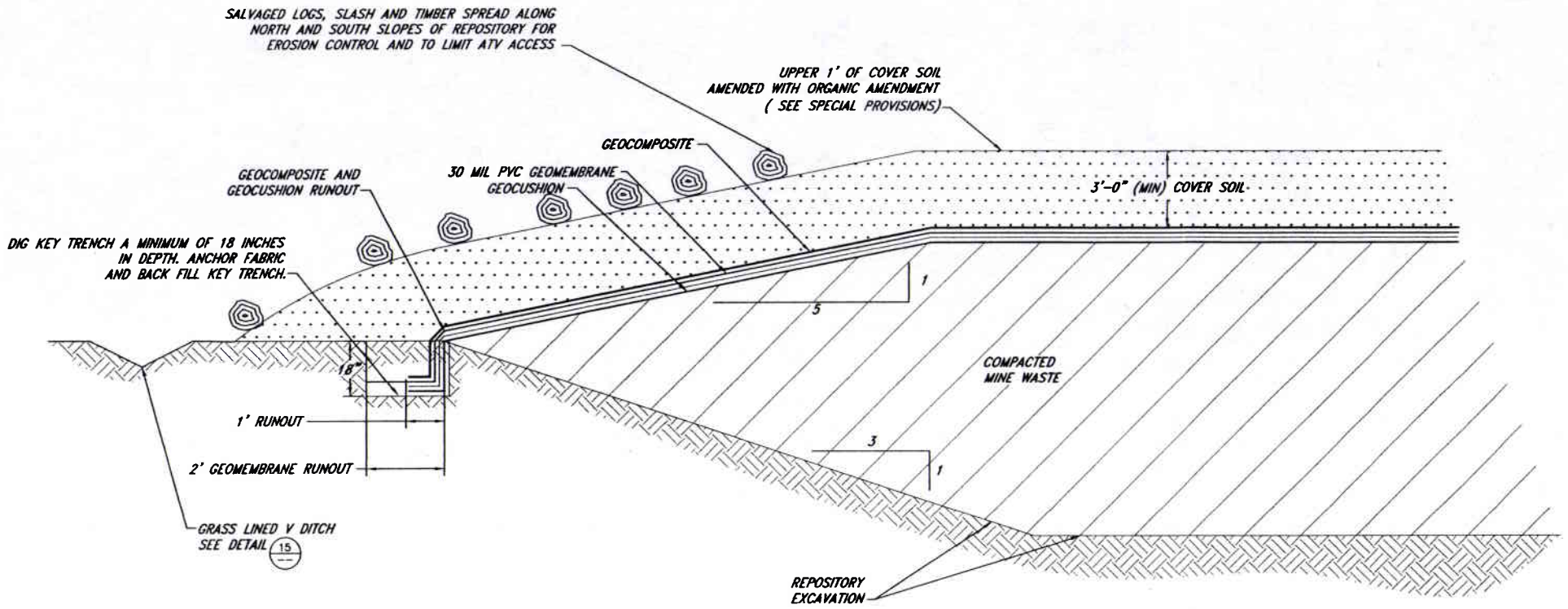
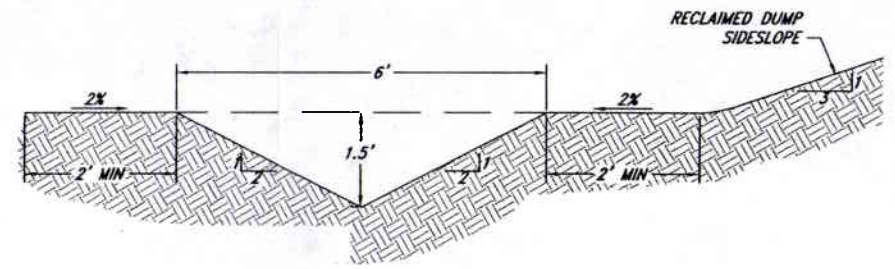
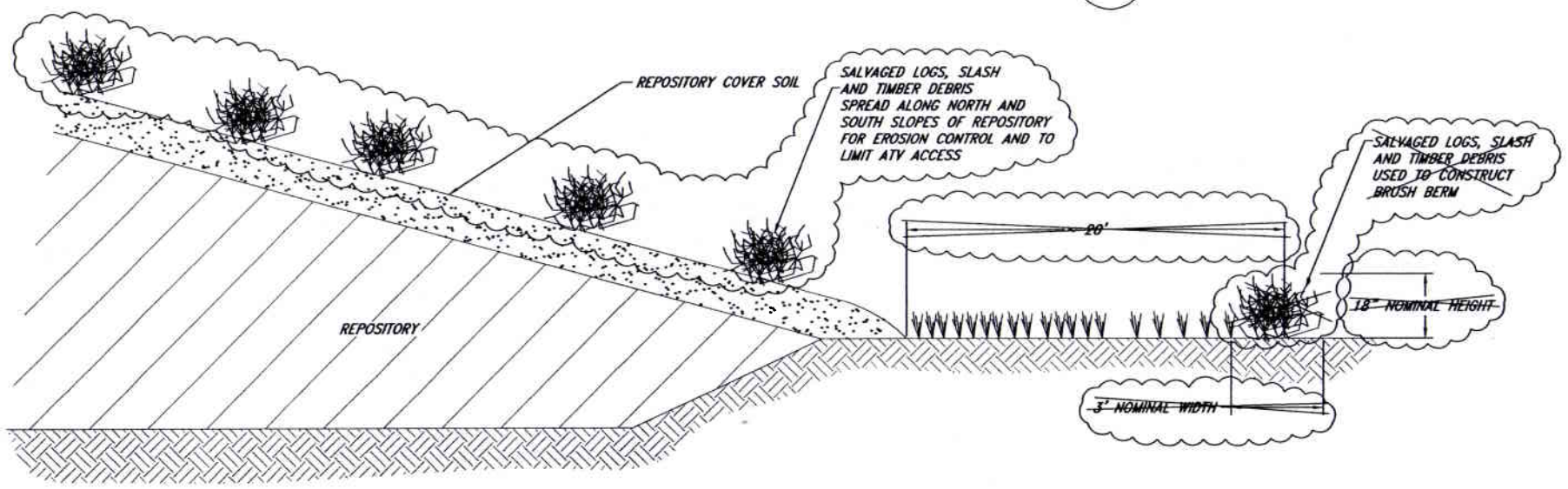


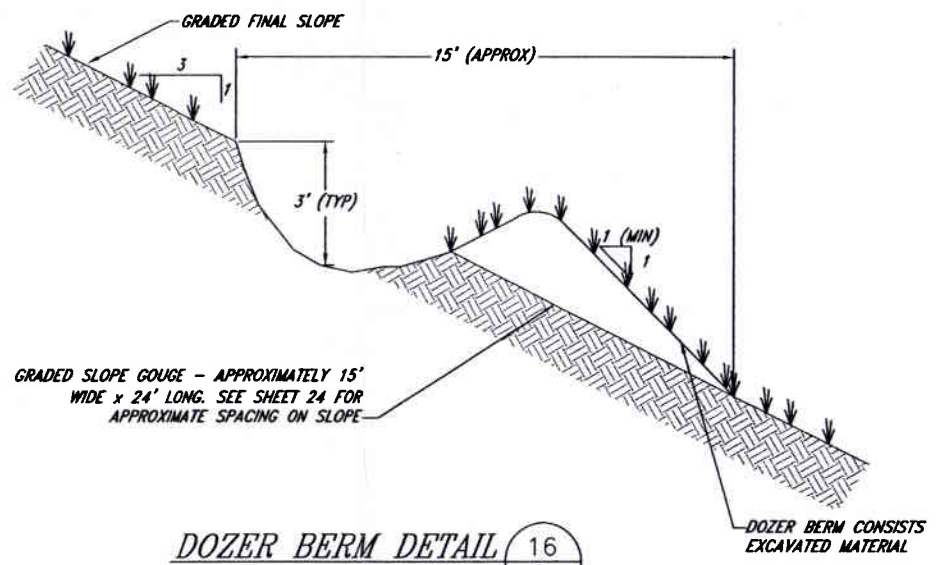
TYPICAL REPOSITORY LAYERING DETAIL 13



GRASS LINED V DITCH DETAIL 15/24



EROSION CONTROL DETAIL 14/24
CONSTRUCT ALONG NORTH AND SOUTH BOUNDARIES OF REPOSITORY



DOZER BERM DETAIL 16/24
NOT TO SCALE

NO.	BY	DATE	REVISION DESCRIPTION

DAR DRAWN | SDB DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.
SCALE HORIZ: AS NOTED VERT: AS NOTED
SCALE IN FEET 0

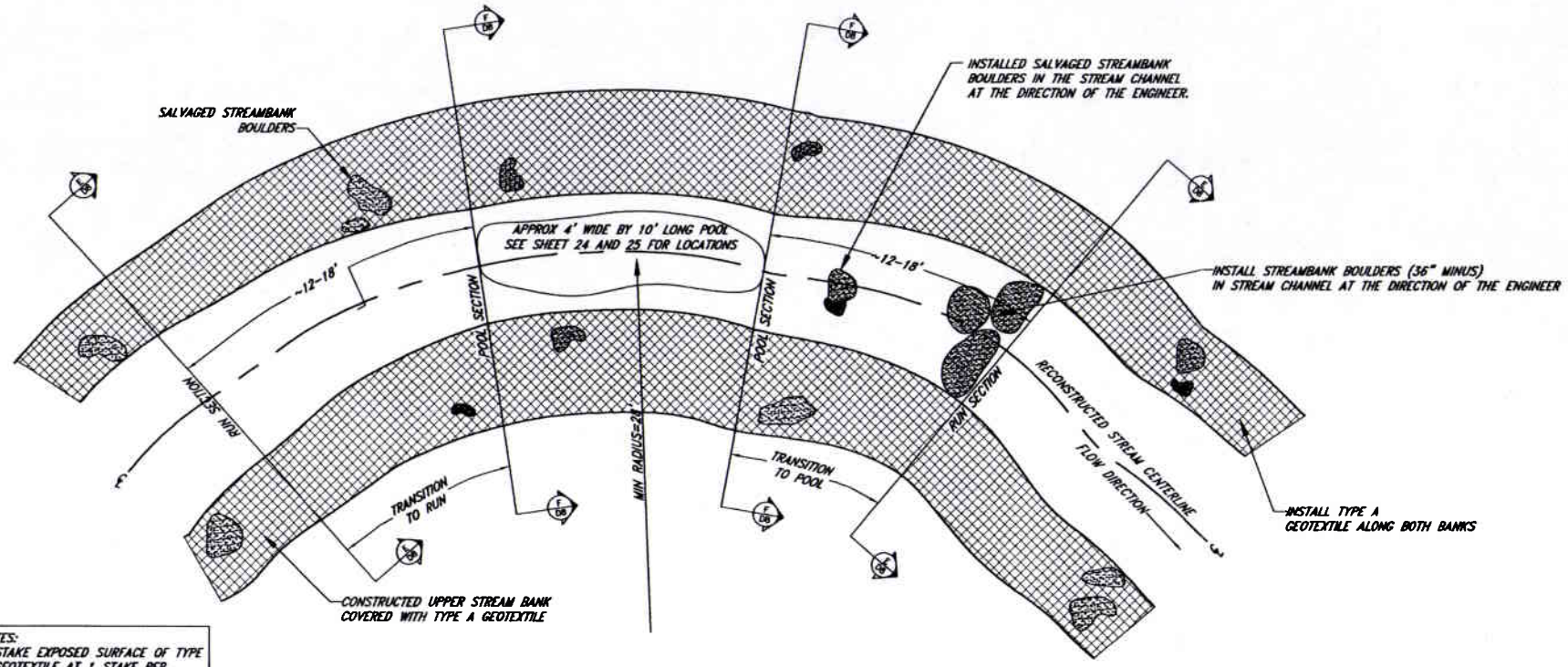
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

REPOSITORY DETAILS

SHEET D7

10/14/2010 1:21:09 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-D114-ASBUILT-10.DWG



NOTES:
1. STAKE EXPOSED SURFACE OF TYPE A GEOTEXTILE AT 1 STAKE PER SQUARE YARD WITH 18" WOODEN CONSTRUCTION STAKES PER SPECIAL PROVISIONS.

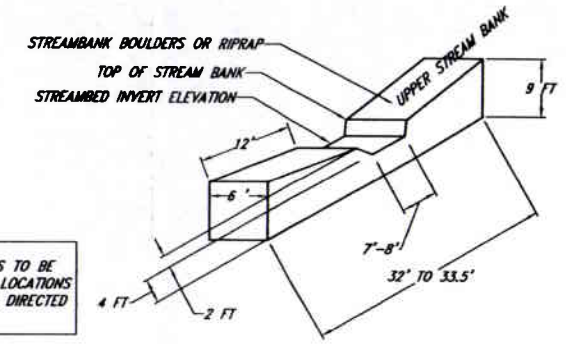
2. TRANSITIONS MAY BE PERPENDICULAR OR TANGENTIAL TO FLOW DIRECTION AS DIRECTED BY ENGINEER.

3. INSTALL SHRUB TUBELINGS AS DIRECTED BY THE ENGINEER.

4. ENGINEER SHALL IDENTIFY THE LOCATION DENSITY FOR SHRUB TUBELINGS.

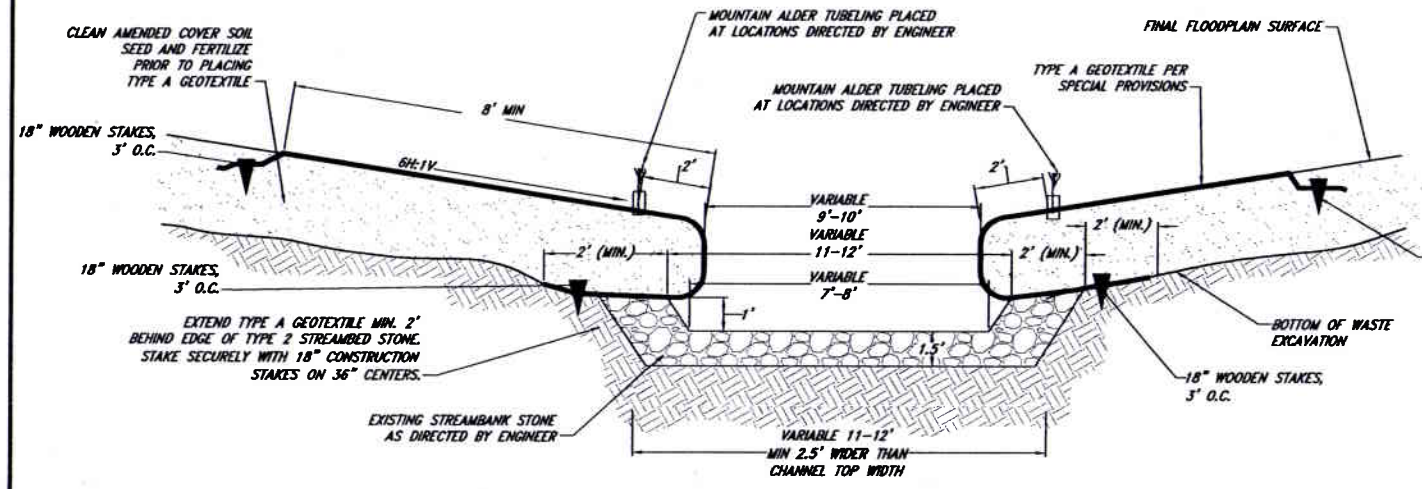
5. SHRUB TUBELINGS SHALL NOT BE PLANTED GREATER THEN 24' FROM STREAM BANK.

RECONSTRUCTED STREAM CHANNEL-PLAN VIEW (17 / --)
N.T.S.

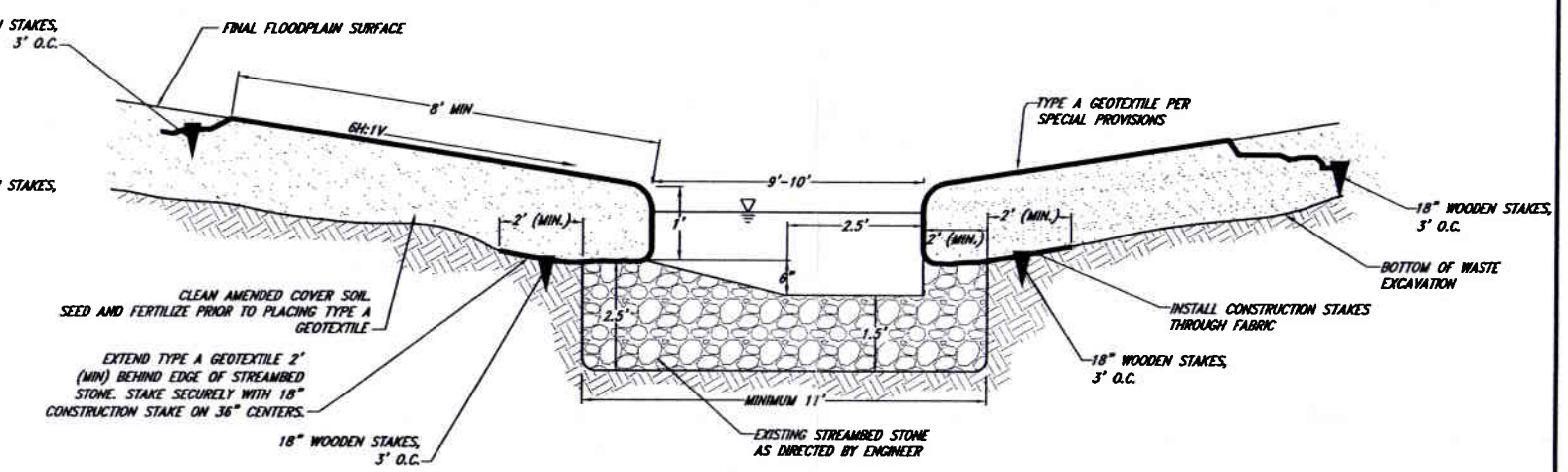


* GRADE CONTROL STRUCTURES TO BE PLACED AT THE APPROXIMATE LOCATIONS SHOWN ON SHEET 28 AND AS DIRECTED BY THE ENGINEER.

GRADE CONTROL STRUCTURE DETAIL (18 / --)
N.T.S.



RECONSTRUCTED STREAM CHANNEL-RUN CROSS SECTION (E / D8)
N.T.S.



RECONSTRUCTED STREAM CHANNEL-POOL CROSS SECTION (F / D8)
N.T.S.

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MCB/JLG DESIGNED | SDB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: NA VERT: NA
SCALE IN FEET
0

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

STREAM RECONSTRUCTION DETAILS

SHEET D8

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GENERAL NOTES:

1. THE SHAPE AND DIMENSIONS SHOWN AT THE EXISTING DECLINED ADIT OPENING ARE APPROXIMATE. FIELD VERIFY ALL DIMENSIONS BEFORE FABRICATION.

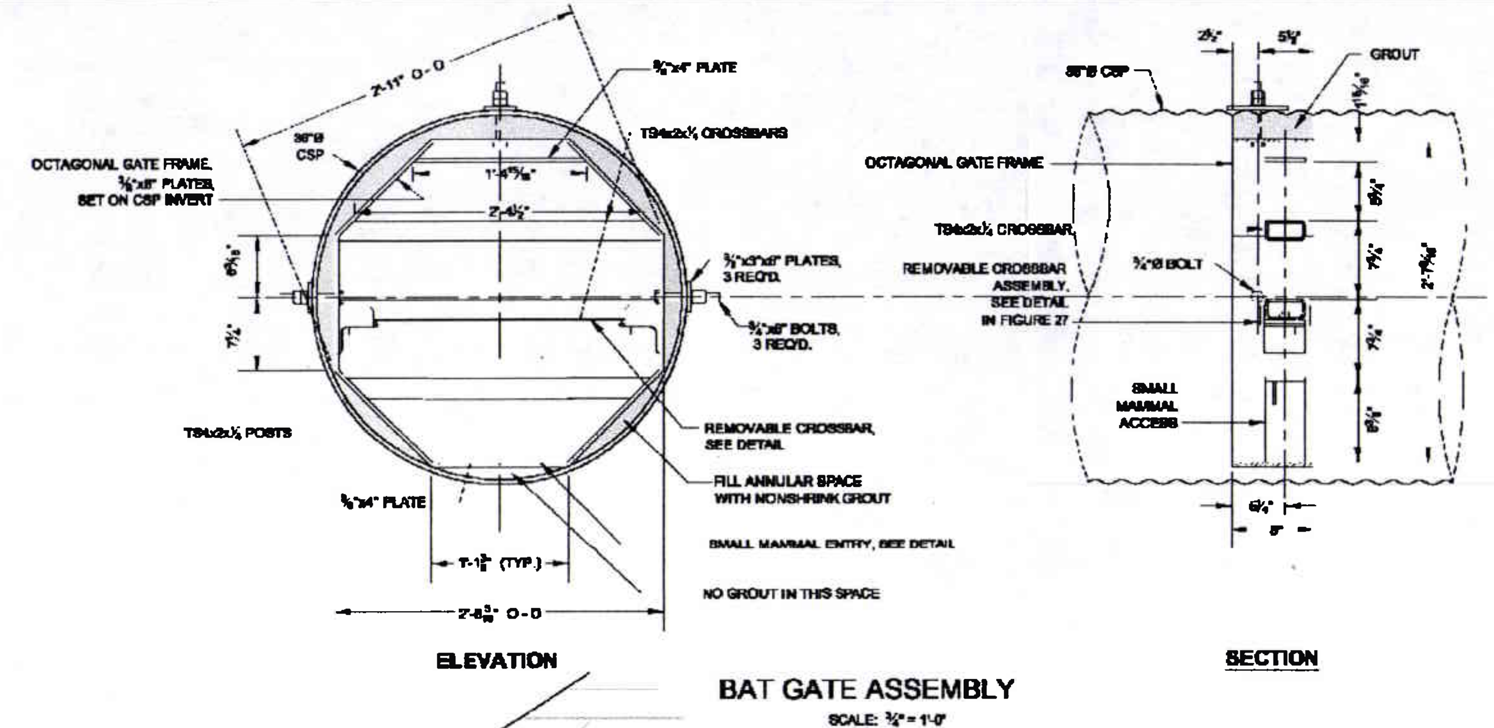
2. GRANULAR EMBEDMENT SHALL BE CRUSHED ROCK OR PEA GRAVEL WITH NOT LESS THAN 95% PASSING ¾" AND NOT LESS THAN 90% RETAINED ON A #4. PLACE IN NOT MORE THAN 6" LAYERS AND COMPACT BY SLICING WITH A SHOVEL OR VIBRATING.

3. ROCK FOR THE BULKHEAD SHALL BE SOUND, DURABLE NATIVE ROCK THAT GIVES A RINGING SOUND WHEN STRUCK WITH A HAMMER.

4. STEEL PLATES AND SHAPES SHALL BE WEATHERING STEEL. WELD ALL JOINTS. CONSTRUCT THE BAT GATE TO ELIMINATE SURFACES ON WHICH MOISTURE OR DEBRIS CAN BE TRAPPED. ALL TUBULAR MEMBERS SHALL BE HERMETICALLY SEALED TO PREVENT THE INCURSION OF MOISTURE, EXCEPT AS OTHERWISE NOTED. ROUND OR CHAMFER ALL EXPOSED SHARP CORNERS AND EDGES.

5. DOUBLE-NUT ALL BOLTS.

6. THE FINISH GRADE ON THE OUTSIDE OF THE CULVERT SHALL HAVE POSITIVE DRAINAGE AWAY FROM THE STRUCTURE.



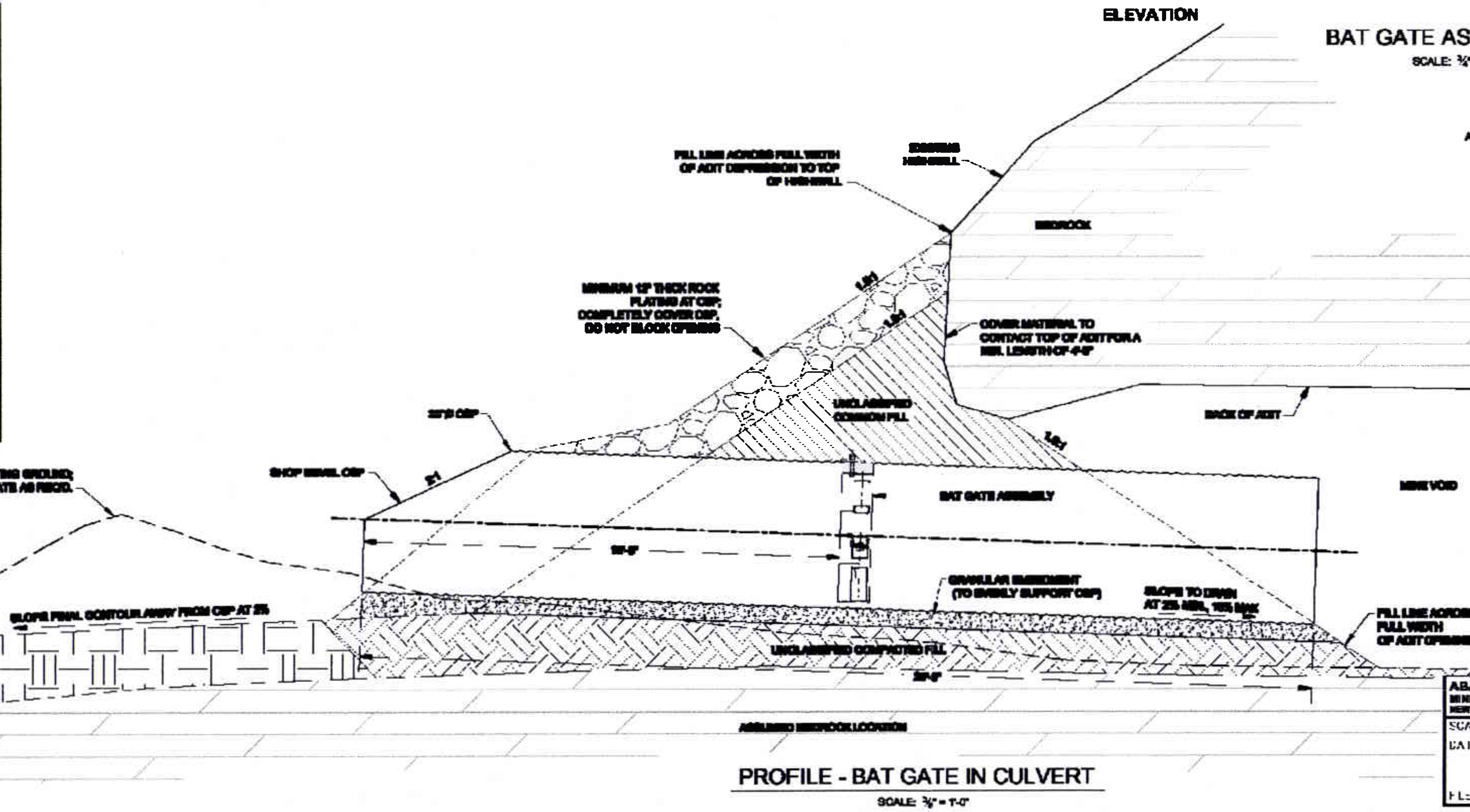
ELEVATION

SECTION

BAT GATE ASSEMBLY

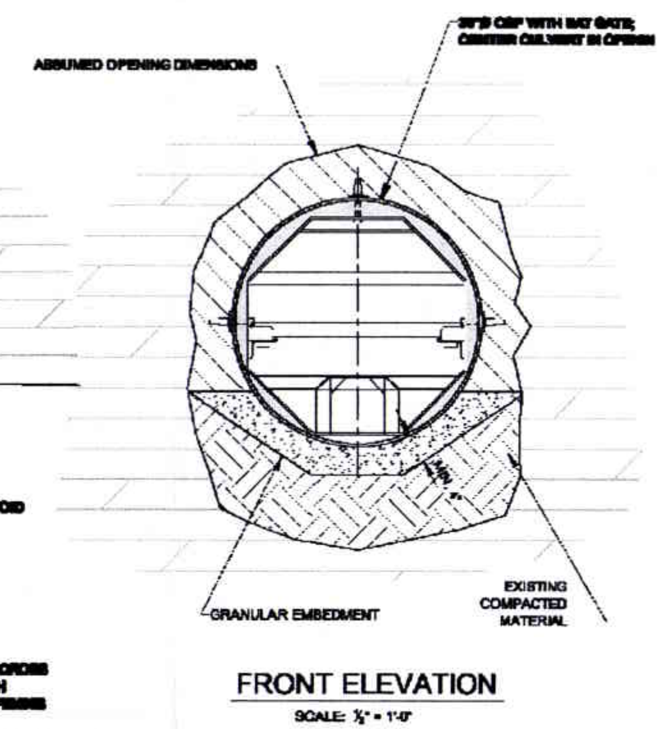
SCALE: ¾" = 1'-0"

CAUTION — THIS PROJECT REQUIRES CONSTRUCTION WORK IN, AROUND, AND OVER HAZARDOUS AND UNPROTECTED MINE SHAFTS, STOPES, ADITS, AND OTHER OPENINGS WHICH MAY BE OPEN TO THE SURFACE OR HIDDEN FROM VIEW BY TRASH, DEBRIS OR THIN AND UNSTABLE LAYERS OF SURFACE MATERIALS OR ROCK. THE CONSTRUCTION SHALL BE RESPONSIBLE FOR THOROUGHLY INVESTIGATING THE SITE CONDITIONS AND SCHEDULING EQUIPMENT, EQUIPMENT OPERATIONS, PERSONNEL AND SAFETY PROCEDURES TO PREVENT ACCIDENTS AND INJURIES.



PROFILE - BAT GATE IN CULVERT

SCALE: ⅜" = 1'-0"



FRONT ELEVATION

SCALE: ½" = 1'-0"

ABANDONED MINE LAND PROGRAM
MINING AND MINERALS DIVISION
NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT

SCALE: AS SHOWN | AML 21.15B | DRAWN BY: KWT
DATE: | | REVISED BY:

CULVERT W/T BAT GATE

FILE: OROGRANDE MINE SAFEGUARD PROJECT PHASE I | FIGURE 12

NO.	BY	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	MCB CHECKED	SCALE HORIZ: AS NOTED VERT: AS NOTED
JSM APPROVED	10/15/10 DATE	10139 PROJECT NO.	0 SCALE IN FEET

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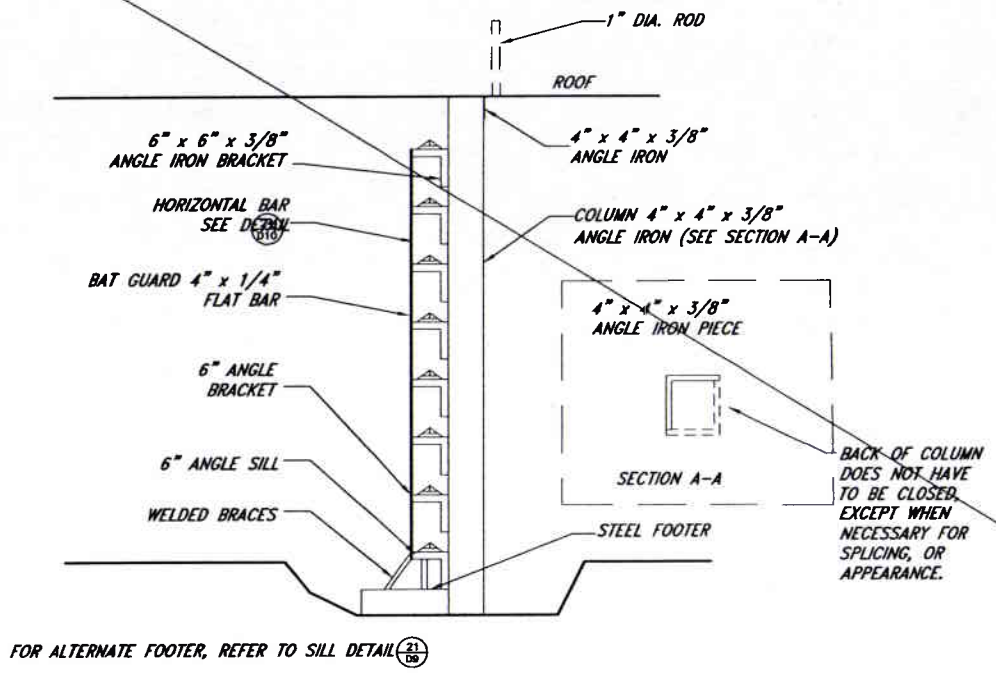
MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

ADIT CLOSURE DETAILS

SHEET D9

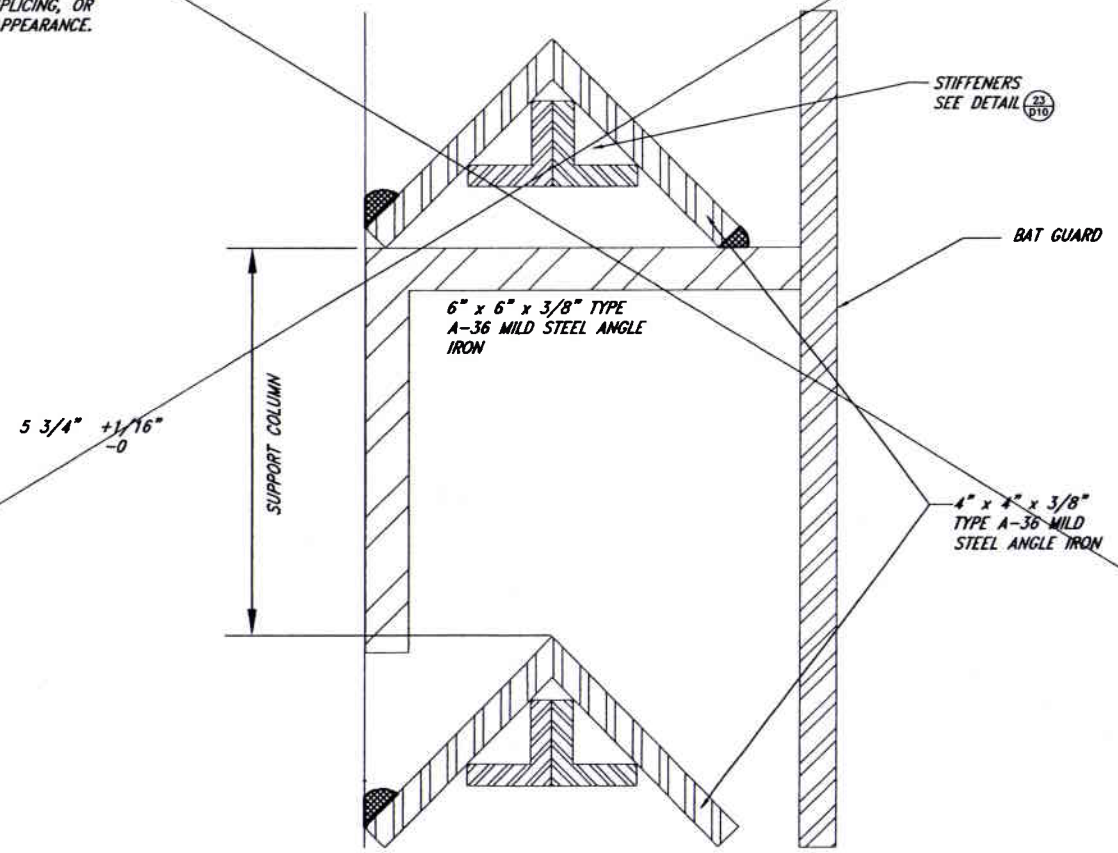
10/19/2010 3:41:04 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-D102-ASBUILT-10.DWG

THIS ADIT DESIGN NOT USED



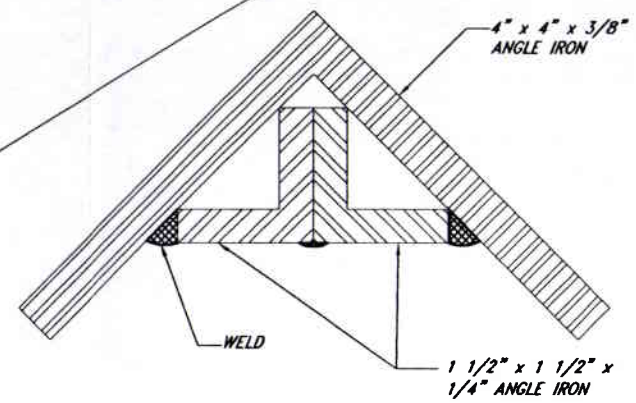
END SUPPORT COLUMN DETAIL (22 D10)

NOT TO SCALE



HORIZONTAL BAR SPACING TYPICAL DETAIL (24 D10)

NOT TO SCALE



STIFFENERS RUN THE FULL LENGTH OF THE HORIZONTAL BAR, EXCEPT FOR BEING 2" SHORTER ON EACH END.

STIFFENER DETAIL (23 D10)

Horizontal Bars
NOT TO SCALE

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JLG DESIGNED | JSM CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0

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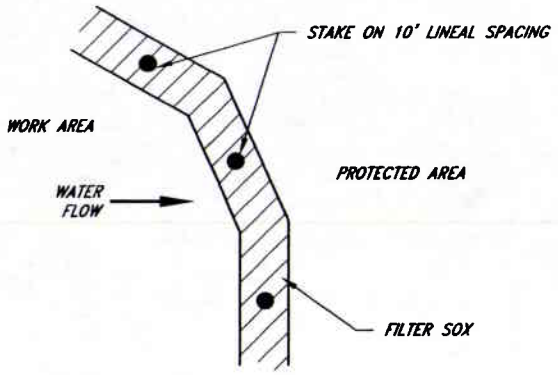
BUTTE, MT 59702

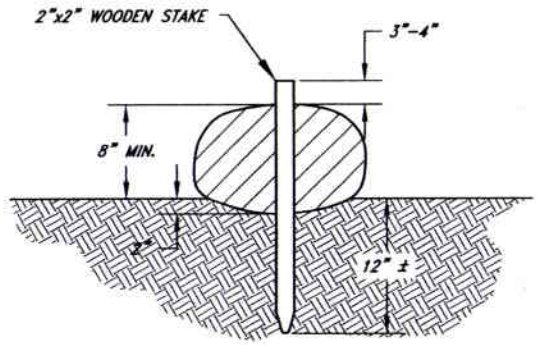
MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

ADIT CLOSURE DETAILS

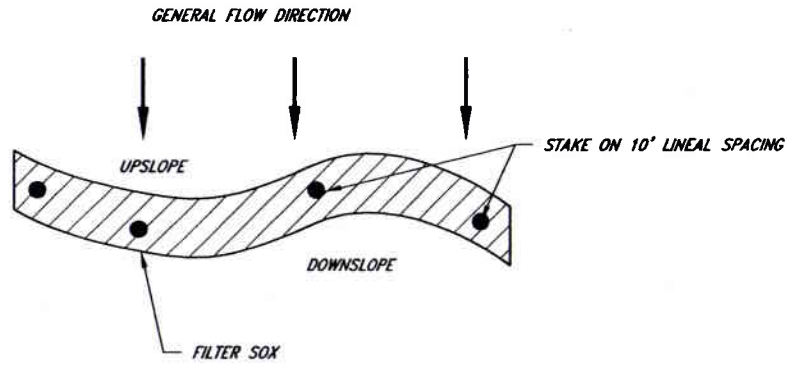
SHEET D10



FILTER SOX PLAN VIEW



FILTER SOX CROSS SECTION (TYPICAL)



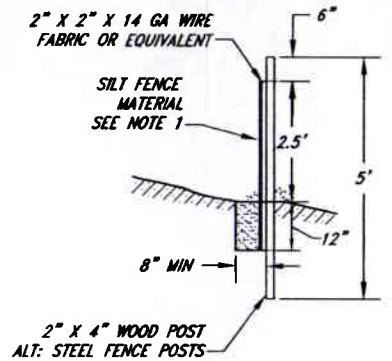
FILTER SOX ON SIDE SLOPE PLAN VIEW

NOTES:
1. FILTER SOX TO BE FILLED WITH COMPOST AND SEED MIX AS SPECIFIED IN SPECIAL PROVISIONS.

2. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER AFTER RECLAMATION WORK IS COMPLETED.

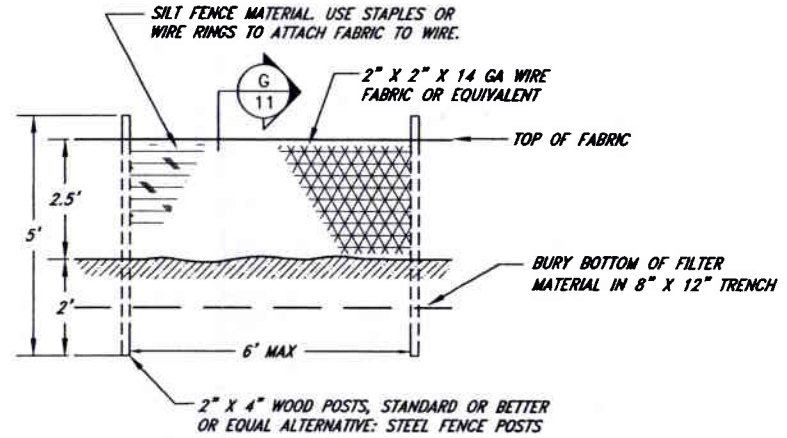
3. ALL FILTER SOX TO BE KEYED INTO NATIVE SOILS A MINIMUM OF 2".

FILTER SOX DETAIL (25 / --)



NOTE:
1. FOR SILT FENCE IN SEDIMENT DETENTION POND SEE DETAIL (10 / D5) USE WORTH AMERICAN GREEN C-125 MATERIAL FOR SILT FENCE MATERIALS.

SILT FENCE SECTION (G / D11)
(CROSS SECTION)



SILT FENCE DETAIL (26 / --)
(FRONT CROSS SECTION)

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JSM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.
SCALE HORIZ: VERT: SCALE IN FEET 0

PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

GENERAL BMP CONSTRUCTION DETAILS

SHEET D11

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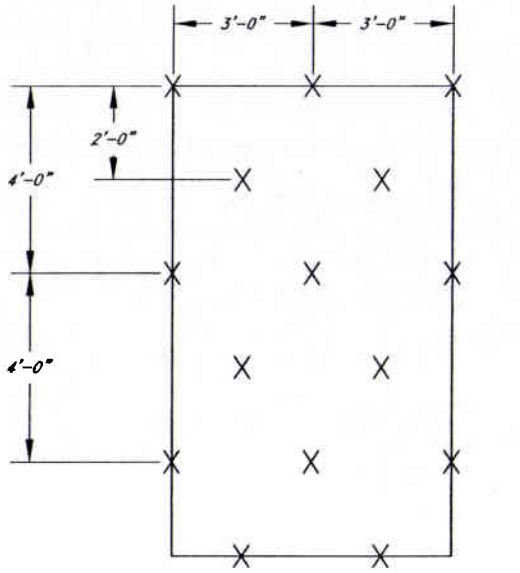

BIODEGRADABLE STAKE PATTERN DETAIL
TWO (2) BIODEGRADABLE STAKES PER SQUARE YARD

1. OVERLAPPED ROLLS ON DOWNHILL SIDE AND DOWNSTREAM DIRECTION AS REQUIRED BY SITE-SPECIFIC CONDITIONS AND AS DIRECTED BY THE ENGINEER.

TYPE B GEOTEXTILE – EROSION CONTROL MAT INSTALLATION DETAIL (27)

N.T.S.

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JSM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 20 40

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P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

EROSION CONTROL MAT
DETAILS

SHEET D12

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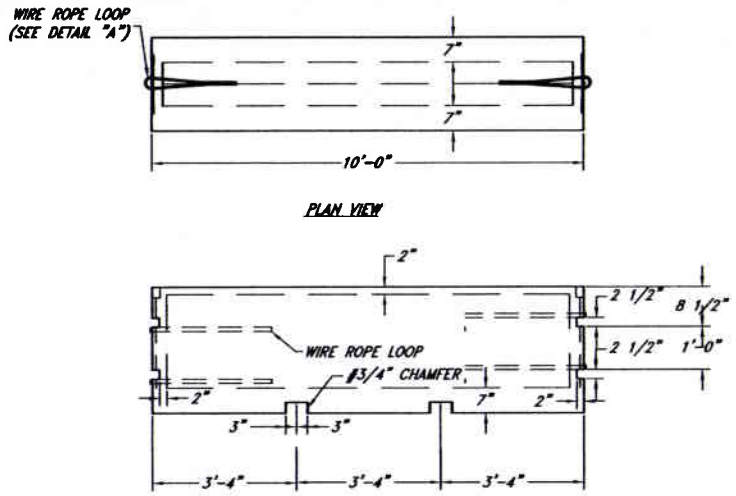
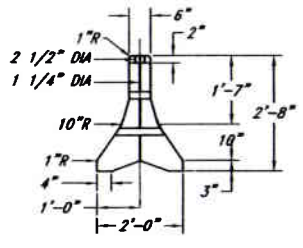
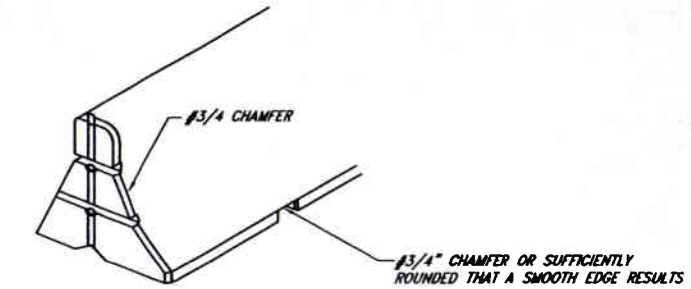


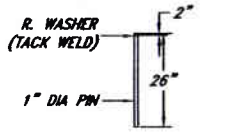
PLAN VIEW

ELEVATION

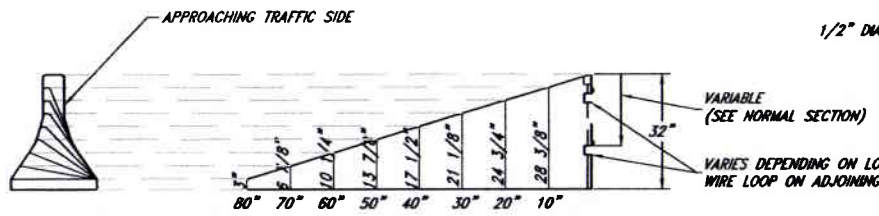


END VIEW

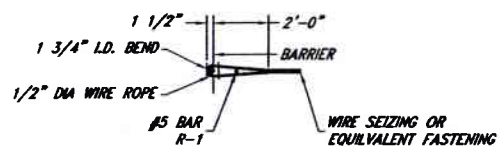




CONNECTING PIN DETAIL



END TRANSITION DETAIL



DETAIL "A"

NOTES:

1. CONCRETE SHALL BE CLASS "DD" OR EQUAL
2. REINFORCING STEEL SHALL BE MADE OF DEFORMED BARS AND SHALL CONFORM TO ASTM A-615, GRADE 60.
3. EACH 10' SECTION SHALL BE CONNECTED WITH A 1" DIA x 26" PIN.
4. THE END TRANSITION SHALL BE A CAST IN PLACE SECTION WITH TRANSVERSE JOINTS PROVIDED AT 10" CENTERS. A 1/4" OPEN JOINT EDGED WITH A 1/4" RADIUS TOOL SHALL BE USED. THE CONTRACTOR MAY CHOOSE TO USE EIGHT PRECAST SECTIONS, BUT SHALL MAKE PROVISIONS FOR CONNECTING THE SECTIONS TOGETHER AND FOR LIFTING. THIS SHALL BE APPROVED IN WRITING BY THE ENGINEER.
5. NOTCHES SHALL BE PLACED ON BOTH ENDS OF EACH SECTION, AS SHOWN, TO FACILITATE EASY REMOVAL.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER FIT-UP OF THE PRECAST CONCRETE BARRIER. SUFFICIENT, PRECAST SECTIONS SHALL BE ASSEMBLED AND PINNED IN THE FABRICATORS PLANT TO DETERMINE THAT PROPER FIT-UP CAN BE MAINTAINED ON ALL ROADWAY ALIGNMENT, CURVES AS WELL AS ON TANGENT. THIS SHALL BE DETERMINED EARLY IN FABRICATION.
7. WIRE ROPE SHALL BE ZINC-COATED STEEL WIRE WITH A MINIMUM BREAKING STRENGTH OF 16,000 LBS.
8. CONNECTING PIN SHALL CONFORM TO ASTM A663, GRADE 45 OR BETTER AND NEED NOT BE PAINTED.

CONCRETE BARRIER DETAIL (28)
(MDT STANDARD DRAWING NO. 84)

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | MDT DESIGNED | JSM CHECKED
JLG APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT: SCALE IN FEET 0 20 40

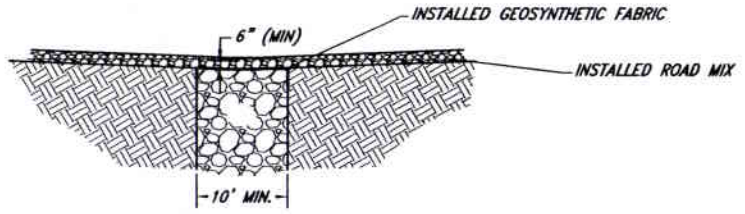
PIONEER TECHNICAL SERVICES, INC.
P.O. BOX 3445
BUTTE, MT 59702

MDEQ/MWCB
SNOWSHOE MINE
RECLAMATION PROJECT

JERSEY BARRIER
DETAILS

SHEET D13

10/14/2010 1:24:11 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MNE-D121-ASBUILT-10.DWG



NOTE:
1. DRAINAGE DIPS SHALL BE INSTALLED AFTER CONSTRUCTION ACTIVITIES ARE COMPLETED.
2. PLACE RIPRAP OUTLET PROTECTION FROM CREST TO TOE OF SLOPE.

FRENCH DRAIN INSTALLATION AT CULVERT #10
(N.T.S.)

NO.	BY	DATE	REVISION DESCRIPTION

CLA DRAWN | JJM DESIGNED | MCB CHECKED
JSM APPROVED | 10/15/10 DATE | 10139 PROJECT NO.

SCALE HORIZ: VERT:
SCALE IN FEET
0

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BUTTE, MT 59702

MDEQ\MWCB
SNOWSHOE MINE SITE
RECLAMATION PROJECT

FRENCH DRAIN DETAIL
SNOWSHOE CREEK ROAD

SHEET
D14

10/19/2010 3:42:17 PM \\SRVW2K\CLIENTDATA1$\DEQ\SNOWSHOE\2010\DRAWINGS\FINAL CONSTRUCTION AS-BUILTS\SNO-MINE-D122-ASBUILT-10.DWG